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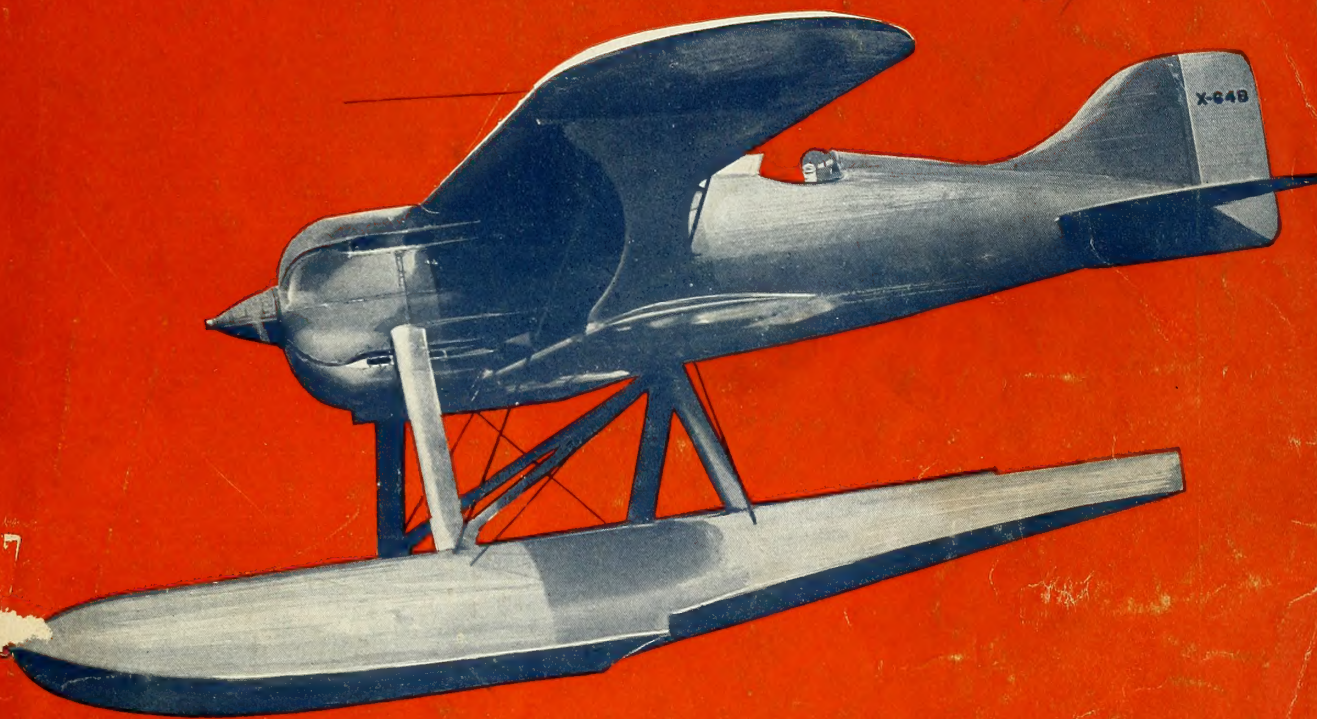
Vol. XI. No. 3

SEPTEMBER 1927

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AERO DIGEST



SEAPLANE SPEED RACE

The NATIONAL AIR RACES — NEW PLANES and ENGINES

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Around the World

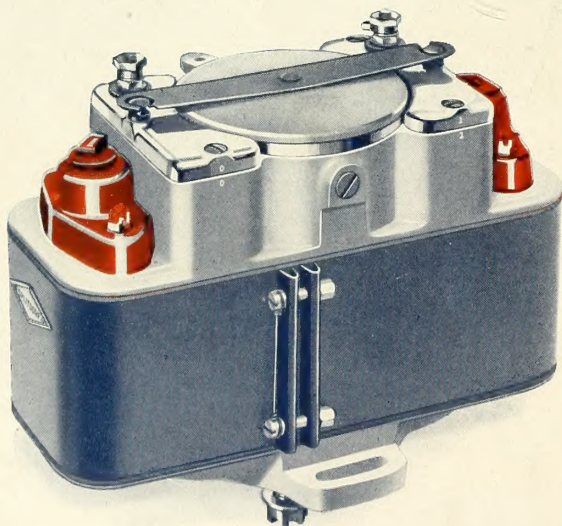
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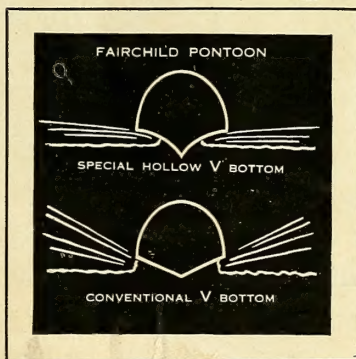


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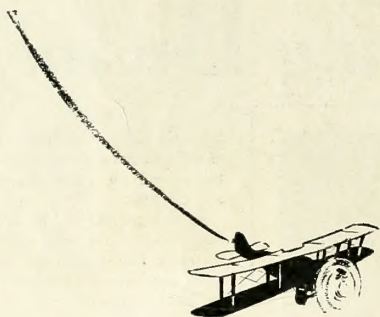
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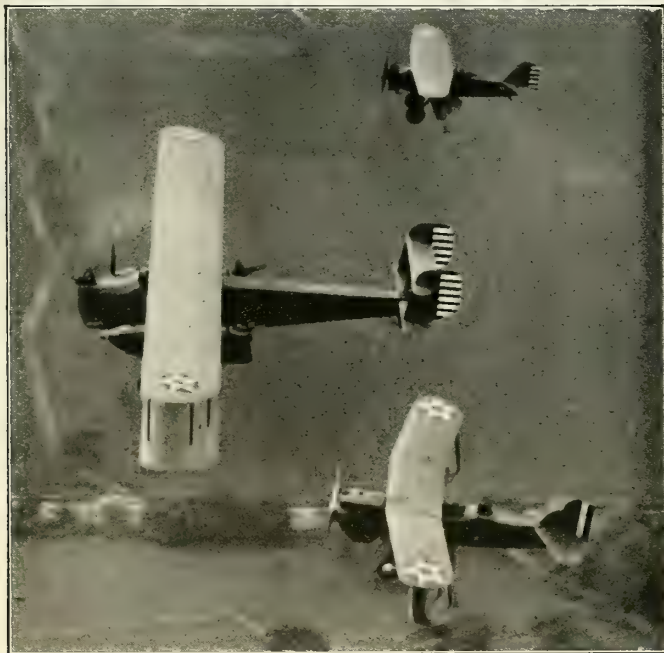
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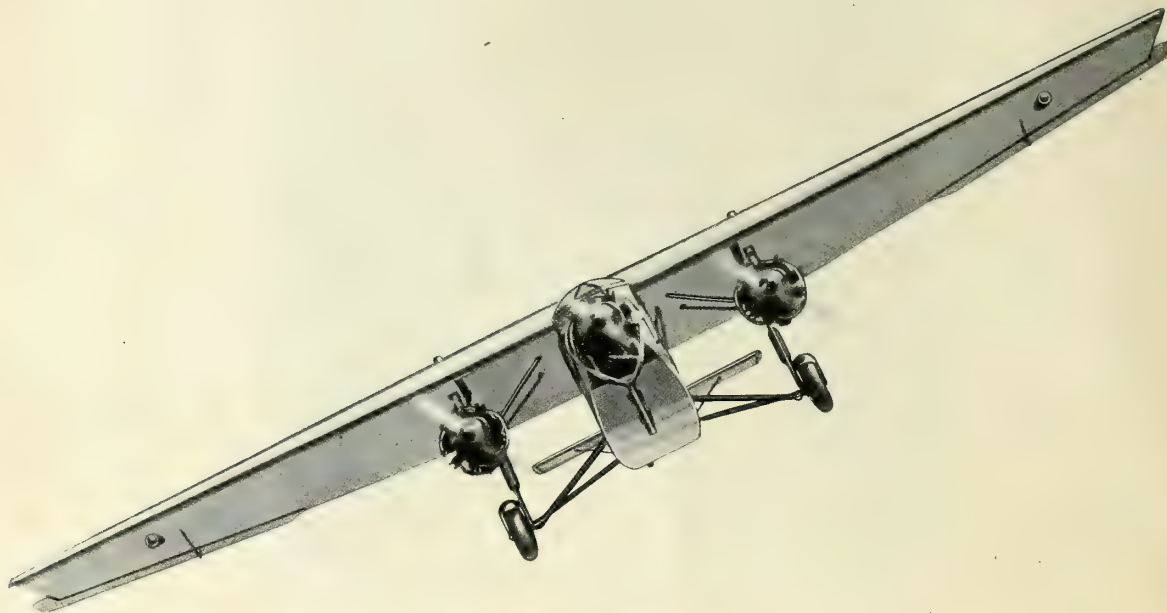
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Interesting features of the Ford tri-motored transport



THE Ford tri-motored transport has been built strictly for earning its way in the air by carrying loads swiftly, regularly and safely at a minimum of expense to the airline operator.

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wheel tread is sixteen feet five inches. Each wheel has a brake which operates independently of the other. These not only shorten the run after landings, but also facilitate cross and down wind taxiing and reduce the number of men required for ground handling.

Here we can give but the barest description of the plane. However, in our new booklet of more than thirty pages—"The New Era of Transportation"—you can learn what this advanced ship really is, and what it has done. We suggest you write for this booklet. It contains, in addition, much valuable information on forming and operating air-lines—information based on experience on the Ford air-lines. And any other information you wish on technical, experimental, construction and operation work of Ford ships will be gladly furnished.

THE STOUT METAL AIRPLANE CO.

Division of Ford Motor Company

Dearborn, Michigan

AERO DIGEST

Vol. 11 No. 3

THE MAGAZINE OF THE AIR

SEPTEMBER, 1927

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Art Goebel over Wheeler Field, Honolulu, after his Pacific flight

THE DOLE PACIFIC RACE

THE *Woolaroc* piloted by Arthur C. ("Art") Goebel, the famous West Coast stunt flier, and navigated by Lieutenant W. V. Davis of the U. S. Navy, won the first prize of \$25,000 in the Dole air race across the Pacific from the mainland to Hawaii. Arriving at Wheeler Field, Honolulu, at 12:23:33 p. m. (6:53:33 p. m. Eastern daylight-saving time), his time in the air was 26 hours, 17 minutes and 33 seconds.

At 2:20 p. m. (8:52 p. m. Eastern daylight-saving time) the *Aloha* piloted by Martin Jensen of Honolulu and navigated by Paul Schluter of San Francisco, landed at Wheeler Field, taking the second prize, \$10,000. Jensen's flying time was 28 hours and 16 minutes.

The *Woolaroc's* average speed on the flight was computed as 92 miles an hour and the *Aloha's* 86.4 miles an hour.

The two other planes which left Oakland airport in the race—the *Golden Eagle* and the *Miss Doran*—are still unaccounted for. Jack Frost was the pilot of the *Golden Eagle* and Gordon Scott, its navigator. Auggie Pedlar was the pilot of the *Miss Doran*, Lieutenant V. R. Knope, the navigator, and Miss Mildred Doran, passenger.

Of the fifteen planes entered in the transpacific race, eight started, and two arrived safely. Death crossed one of the entrants from the starter's list when the Tremaine low-wing monoplane, piloted by Lieutenant George W. D. Covell, crashed into Point Loma August 10th on its trial flight, killing him and his navigator, Lieutenant Richard S. Waggener, both San Diego naval fliers.

On August 11th the *Spirit of Los Angeles*, a twin-motored triplane, nose-dived into San Francisco Bay and was wrecked. The three members of the crew, James L. Giffin, pilot, Ted Lundgren, navigator, and Lawrence Weill, passenger, were uninjured.

Another entrant was killed on August 12th when Captain Arthur V. Rogers, British war ace, crashed in his Bryant monoplane, the *Angel of Los Angeles*, on a test flight near



Art Goebel, winner of the Dole race.

Los Angeles.

Two entries, those of Robert Fowler and Frank Clark, withdrew as they were unable to obtain satisfactory planes, and one was unable to get away from his home hangar with his new plane.

Planes and pilots were required to pass examinations by Department of Commerce officials, Lieutenant B. H. Wyatt, U. S. N., conducted the navigation tests.

The subject of qualifications and competency of pilots, navigators and planes came up and a controversy arose between some of the pilots and the official inspectors regarding the decision to postpone the race. An agreement was reached and the start of the race was scheduled for noon of August 16th instead of August 12th.

The night before the race Oakland airport was the scene of busy preparations—caterpillar tractors towing rollers were hard at work leveling and hardening the 7000 foot runway, water wagons were laying the dust, and fire engines and "crash equipment" were stationed on the field in case of need. At dawn nine planes were on the line, the center of interest of thousands of spectators who arrived at the airport long before sunrise.

The entrants in order of starting, which was decided by the drawing of lots, were:

1. *Oklahoma*—Travel Air monoplane. Pilot—Bennett H. Griffin, Oklahoma City. Navigator—Al Henley, Bartlesville, Okla. Entered by the Phillips Petroleum Company of Oklahoma City.

2. *El Encanto*—monoplane designed by Lieutenant Goddard and built under his supervision. Pilot—Lieutenant Norman Goddard, U. S. N. R., San Diego. Navigator—Lieutenant Kenneth Hawkins, U. S. N., Wilkesbarre, Pa. Fuel capacity of plane, 360 gallons, wing area, 283.5 square feet.

3. *Pabco Flyer*—Breese monoplane. Pilot—Major Livingston Irving, Berkeley, Calif., flying alone. Fuel capacity of plane 380 gallons; wing area, 260 square feet.



Nine of the Dole race airplanes lined up for the start at Oakland airport.

Underwood & Underwood.



P. & A. Photo.

Captain Paul Schluter.

Mich. Fuel capacity of plane, 400 square feet. Flight backed by William F. Malloska, Flint, Mich.

6. *City of Peoria*—Air King biplane. Pilot—Charles W. Parkhurst, Lomax, Ill. Navigator—Ralph C. Lowes, Peoria, Ill. Fuel capacity of plane, 372 gallons; wing area, 342 square feet. Entered by the National Airways System of Lomax, Ill.

7. *Aloha*—Breese monoplane. Pilot—Martin Jensen, Honolulu. Navigator—Paul Schluter, San Francisco. Fuel capacity of plane, 400 gallons; wing area, 260 square feet; gross weight, 4985 pounds. Financed by popular subscription in Honolulu.

8. *Woolaroc*—Travel Air monoplane. Pilot—Arthur C. Goebel, Los Angeles. Navigator—Lieutenant W. C. Davis, U. S. N., San Diego. Fuel capacity of plane, 425 gallons; wing area, 310 square feet; maximum speed, 125 m. p. h. Financed by The Phillips Petroleum Co.

9. *Dallas Spirit*—Swallow monoplane. Pilot—Captain William P. Erwin, Dallas, Texas. Navigator—Alvin Eichwaldt. Fuel capacity of plane, 460 gallons; wing area, 330 square feet; estimated cruising speed, 105 m. p. h., over a radius of 4,500 miles; weight, fully loaded, 5,650 pounds.

All of the planes were equipped with Wright Whirlwind engines.

Before the start entry number 6, the *Spirit of Peoria*, was disqualified because the inspectors decided that the plane had insufficient fuel capacity.

Noon—The race is on!

The *Oklahoma* moves down the runway and leaves the ground just at noon. Goddard's *El Encanto* streaks over the starting line, veers off the path at the 4,500 foot mark and turns over, crumpling the left wing and ripping off the landing gear. Neither Goddard nor Hawkins are hurt.

Major Irving's *Pabco Flyer* roars down the line, but is unable to get more than a few feet off the ground. His plane is towed off the runway and

Entry backed by employees of the Berkeley paraffin companies.

4. *Golden Eagle*—Lockhead "Vega" monoplane. Pilot—John W. Frost, San Francisco. Navigator—Gordon Scott, Los Angeles. Fuel capacity of plane, 350 gallons; wing area, 260 square feet. Entered by the San Francisco Examiner.

5. *Miss Doran*—Buhl biplane. Pilot—John A. Pedlar, Flint, Mich. Navigator—Vilas R. Knope, U. S. N., San Francisco. Passenger—Miss Mildred Doran, Flint,

takes its place at the end of the line for another trial.

The *Golden Eagle* takes the air at 2700 feet and is 200 feet up at the end of the runway.

The *Miss Doran* makes a fine run and takes off easily.

The *Aloha* gets off at 2,500 feet.

The *Woolaroc* crosses the line and is off at 3,000 feet.

Then the *Dallas Spirit* hops safely off.

At 12:43 the *Miss Doran* comes back with her motor missing and makes a good landing despite the load of fuel.

A few minutes later the *Oklahoma* circles back over the airport.

And yet another, the *Dallas Spirit*, returns, but with slight damage on landing. A window in the bottom of the fuselage, for the navigator to sight through, tore open during flight, the wind ripped the fuselage covering loose, and was the cause of Captain Erwin's return.

The *Oklahoma* lands safely.

Major Irving starts down the runway again in his *Pabco Flyer*. The plane gets up in the air at 2500 feet, but crashes at the end of the runway. Irving is uninjured.

After repairing the motor, at 2:03 the *Miss Doran* crosses the starting line again.

Erwin and Griffin give up hope of taking off that day and the Oakland airport's busiest day ends with four planes over the Pacific enroute over the great circle steamship lane to Honolulu—distance 2,407 miles.

The Dole flight log, as given by the Associated Press, was as follows (all times being Pacific Standard Time):

TUESDAY, AUGUST 16

12:31 p. m.—Monoplane *Golden Eagle* takes off at Oakland airport.

12:34 p. m.—Monoplane *Aloha* takes off.

1:05 p. m.—*Aloha* passes over Farallones.

2:03 p. m.—Biplane *Miss Doran* takes off on second attempt.

2:35 p. m.—Motorship *Silver Fir*, 185 miles out, reports *Aloha* overhead, north of direct course.

2:43 p. m.—*Miss Doran* reported passing Farallones.

2:50 p. m.—Steamer *Wilhelmina* reports *Aloha* putting south toward direct course.

2:55 p. m.—Destroyer *Meyer* reports *Aloha* 200 miles out, still 35 miles north of course.

4:00 p. m.—Destroyer *Hazelwood* reports *Woolaroc* 270 miles out.

4:35 p. m.—Steamship *Wilhelmina*



P. & A. Photo.

Lieutenant William J. Davis.



P. & A. Photo.

"Gassing up" the *Woolaroc*.

Congratulations!

to

Arthur C. Goebel and
Lieutenant Wm. V. Davis

of the

“Travel Air” Monoplane “Woolaroc”

YOUR wonderful flight to Honolulu adds another chapter to aviation history. The fact that you were first to arrive from a field of fifteen entrants and eight actual starters proves that you made sincere preparation and were truly masters of the situation. We are proud that you chose Phillips “Nu-Aviation” Gasoline for this great flight.

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reports message from *Woolaroc* 300 miles out.

8:00 p. m.—Destroyer *McDonough* reports *Woolaroc* 300 miles out.

8:50 p. m.—Destroyer *Corry* reports message from *Woolaroc* 517 miles out.

11:30 p. m.—A radio from the destroyer *Corry* reports message from *Woolaroc* 750 miles out.



The Breese monoplaner Aloha taking off for Honolulu.

WEDNESDAY, AUGUST 17

2:00 a. m.—Steamship *Manulani* reports through the Army Signal Corps, two planes believed the *Woolaroc* and *Miss Doran*, on northern edge of course, to be approximately midway.

2:00 a. m.—Steamship *City of Los Angeles* reports in messages received by the Army Signal Corps, Honolulu, two planes, believed the *Golden Eagle* and *Aloha*, on the southern edge of the course, approximately midway.

4:00 a. m.—Steamship *Manukoi* reports *Woolaroc* 1485 miles on her course.

9:30 a. m.—Steamship *City of Los Angeles* reported *Woolaroc* 450 miles from Honolulu.

11:05 a. m.—Mutual Telephone Company, Honolulu, received message from Pilot Goebel of *Woolaroc*, via, Wahiawa Radio Station, that plane was 250 miles from Honolulu.

12:00 noon—Army Signal Corps, Honolulu, intercepted radiogram from *Woolaroc* that the plane was nearing Island of Oahu.

12:00 noon—Radio Corporation received report from steamship *City of Los Angeles* that *Woolaroc* "all well," 206 miles from Honolulu.

2:39 p. m.—Army Signal Corps, Honolulu, reported *Woolaroc* passed over Fort Ruger, Island of Oahu.

2:53 p. m.—*Woolaroc* landed at Wheeler Field, Honolulu, winning first prize Dole flight.

4:50 p. m.—*Aloha* landed at Wheeler Field, Honolulu, winning second prize Dole flight.

The arrival of the *Woolaroc* at Wheeler Field was the signal for a tumultuous ovation by the twenty thousand persons waiting at the field. Goebel was reported nearing the field a few minutes before he landed by an Army Air Corps squadron which had flown out to meet the fliers. He flew over Honolulu and circled the field several times, and upon landing stepped from his plane dressed in a plain business suit. Lieutenant Davis, in his navy uniform, followed him.

Governor Farrington, General Lewis, James Dole, the prize donor, and the officialdom of Honolulu, greeted the victor, who was surprised to learn that he was the first one there.

They experienced no difficulty on the entire flight and were both in good shape after the trip. The fliers said they had not sighted water since leaving the Golden Gate, until that morning. They flew at an elevation of from 6,000 to 8,000 feet and had good weather all the way.

Following the welcome by the Governor, army and navy officials, and civilians, Goebel and Davis left for Honolulu, 25 miles away, for a "shave and a swim"—Goebel's first wish on landing, when told he could have anything he wanted.

Just as the crowds were leaving the field, the *Aloha* appeared over the field. Cheers and shouts went up again for the second prize winner! Leis were heaped on Jensen, Schluter and Mrs. Jensen who was there to greet her husband. They had been lost but after four hours wandering found their location and made for Wheeler Field.

Goebel, praising his navigator, said: "The course was aimed to hit Maui or Molokai about 9 o'clock this morning and that's just what we did. I saw the dim shore of Molokai in the distance and, boy, that was a joyful feeling!"

" 'Twas but a moment later that Lieutenant Davis pointed out Maui. We were flying at an altitude of 9000 feet and in another hour we were over land. That settled it. I knew my calculations were correct. These were made months in advance. We had gasoline enough for five hours' flying when we landed at Wheeler Field. That would have taken us nearly 600 miles further without any trouble."

The *Woolaroc* was the only one of the four planes that carried radio transmitting apparatus, and so was the only one reporting its position. The *Woolaroc* and the *Golden Eagle* were equipped to receive messages and the army radio beacon signals.

Martin Jensen believes that if he had a radio set aboard they would have arrived first. He said: "This was demonstrated when we lost three hours Wednesday morning circling about waiting for high noon in order for Captain Paul Schluter, my navigator, to shoot the sun and get his position, before we could proceed. And when he got it, we gave her the gun and approximately two hours later hit the Island of Oahu right on the nose and ten minutes later had landed at Wheeler Field to the accompanying shouts and cheers of the crowd."

"The preliminary examination of the gas tanks showed that we had about five gallons of gas, or about half an hour of flying time left to us."

But all the celebrations over the successful flights of the *Woolaroc* and the *Aloha*. (Continued on page 366)



N. W. Ayer & Son.

Telephotograph of Martin Jensen.

First and Second—in the Hawaiian Flight
Art Goebel's Travel Air "Woolaroc"
Martin Jensen's Breese "Aloha"

WERE EQUIPPED WITH
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THEY used Pioneer Compasses, Speed
and Drift Indicator, Bank and Turn
Indicator, Air Speed Indicator, Rate
of Climb Indicator, Altimeter, etc.

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MAIN OFFICE AND FACTORY BROOKLYN NEW YORK USA

Art Goebel says:

“My winning the Dole prize for the
California to Hawaii flight was the
result of having a real navigator,
good instruments, fuel and a
Travel Air Monoplane which never
faltered.”



TRAVEL AIR MFG. CO., Inc.
Factory and General Offices
WICHITA, KANSAS

MORE LONG-DISTANCE FLIGHTS

AROUND-THE-WORLD

EDWARD F. SCHLEE, president of the Wayco Oil Corporation, and William Brock, his pilot, are attempting to circle the globe by air in 15 days. They flew from Detroit to Curtiss Field, L. I., on August 22nd, to Old Orchard Beach, Maine, August 25th, and, on the 26th, to Harbor Grace, Newfoundland, their official starting point. A special runway had been built at Harbor Grace airport and arrangements had been made with the New York City weather bureau to have weather reports sent by radio to Cape Race and relayed by telephone to Harbor Grace.

At 5:14 a. m. Eastern Standard Time, August 27th, they hopped off from Harbor Grace for Croydon Airport, London, England. The weather conditions were ideal for the take-off. They had put aboard, the evening before, 350 gallons of gasoline, filling all their tanks and storing an extra supply in five-gallon tins in the fuselage. After seven hours' sleep, Schlee and Brock arrived at the Harbor Grace field about five o'clock and got away with little delay, flying straight into a rainbow.

After covering about sixty miles, they ran into squalls. From then on they flew through storms, fog and high winds. During the night they battled through the most terrific storm of all and were lost for three hours in the fog over England. By dropping messages asking for their location, they attracted the attention of a life-saving station at Seaton, Devon, which wrote the name of the town in white letters on the sand and ran up the British flag. The flyers then certain that they were in England, got their bearing and headed straight for London.

At 4:23 a. m., Eastern Standard Time, they arrived at Croydon airport and made a perfect landing. Their flying time from Harbor Grace to Croydon was 23 hours 9 minutes. Their gasoline tanks contained 85 gallons after the transatlantic flight.

The next morning at 8:31 o'clock (3:31 a. m. Eastern Standard Time) Schlee and Brock took off for Munich, Germany. This second leg of their flight around the world was completed at 4 p. m. (10 a. m. Eastern Standard Time) when they landed at the flying field at Munich.

Another good night's rest and the globe hoppers soared away from Munich at 6:35 a. m., Berlin Time, for Belgrade, Yugoslavia. Their Stinson-Detroit monoplane christened "Pride of Detroit" won this year's



Wide World.

Edward Schlee and William Brock, round the world travelers, and their Stinson plane.

National Air Tour. It has since been equipped with a new Wright Whirlwind engine. A 200-gallon fuel tank on which the pilots will sit has been installed in the cabin. There are two 40-gallon wing tanks and twenty-six 5-gallon containers are to be carried in the plane on the longest leg of the flight, which will be nearly 2,500 miles. The plane has a total gas capacity of 410 gallons; 22 gallon oil tank. Its weight, empty, is 2,040 pounds; high speed, 128.5 m.p.h. at 1,960 r.p.m. A complete description of the Stinson-Detroit monoplane was published in the August issue of AERO DIGEST.

The plane will use wheels for the entire flight; the engine will be changed at Tokio. They have a radio receiving set for use as an aid to navigation on several legs of the flight over which radio beacons are operated.

In addition to the Pioneer earth inductor compass, the plane is carrying a magnetic compass and a British periodic compass. A rubber "aircraft" and the 200-gallon fuselage tank, which can be emptied and sealed if the plane is forced down at sea, will act as flotation gear.

The route to be followed by the flyers and the length of the various legs of the flight is:

Harbor Grace, Newfoundland, to London, England, 2,350 miles; to Stuttgart, Germany, 460 miles; to Belgrade, Yugoslavia, 610 miles; to Constantinople, Turkey, 500 miles; to Aleppo, Syria, 590 miles; to Baghdad, Irak, 485 miles; to Bundar Abbas, Persia, 885 miles; to Karachi, India, 710 miles; to Allahabad, India, 925 miles; to Calcutta, India, 485 miles; to Rangoon, India, 665 miles; to Hue, French Indo China, 775 miles; to Manila, Philippine Islands, 890

miles; to Tokio, Japan (radio beacon), 1,820 miles; to Sand Island of Midway Islands (radio beacon), 2,480 miles; to Honolulu, Hawaiian Islands (radio beacon), 1,440 miles; to San Francisco, 2,400 miles; to Cheyenne, 925 miles; to Chicago, 865 miles; to Detroit, 257 miles; to Harbor Grace, 1,550 miles. Total mileage, 22,067 miles. Total estimated flying time, 240 hours.

Edward S. Evans and Linton Wells, by means of airplanes, boat and train, circumnavigated the globe in 28 days, 14 hours and 36 minutes. By using their plane over the entire course of 20,845 miles, Schlee and Brock hope to return to Harbor Grace in 15 days. Mr. Schlee is financing the flight.

GEORGIA-BRAZIL

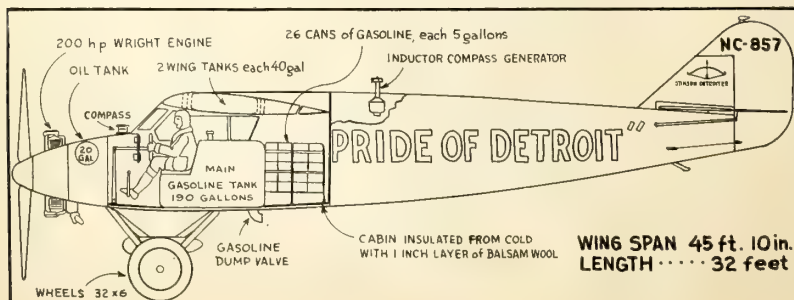
PAUL R. REDFERN took off alone in his Stinson-Detroit monoplane, *The Port of Brunswick*, from Glynn Isle Beach, Brunswick, Georgia, at 12:46 p. m. Eastern Standard Time, August 25th, for a 4,600-mile flight to Rio de Janeiro, Brazil.

Except for a steamer's report that he had been sighted 300 miles east of the Bahama Islands on the afternoon of August 25th, no further news has been heard regarding him. His gasoline supply of 520 gallons was calculated to last about 52 hours. Therefore, it is certain that he was not in the air after 4:30 p. m. August 27th.

Gales were reported to have swept across Redfern's plotted course, which may have blown him off his course. If he was forced down in the wilds of South America, it may be weeks and even months before word is received from him.

On the performance tests the gross weight of his plane was 4,790 pounds, with pilot and passenger, 400 gallons of gasoline and 5 gallons of oil; weight empty, 2,100 pounds. The wing loading was 16.4 pounds per square foot; power loading, 21.8 pounds per square foot; take-off, 2,100 feet in 32 seconds; high speed, 128 miles per hour. The plane maintained perfect balance with this load by use of the stabilizer.

The route of Mr. Redfern's flight, which was sponsored by a group of Brunswick, Ga., citizens, would take him over 2,800 miles of Brazilian jungles.





Captain E. W. Densham, three mechanics, Lloyd Bertaud and James Hill with their transatlantic monoplane "Old Glory."

NEW YORK-ROME

AT Roosevelt Field, Long Island, N. Y., Lloyd Bertaud, pilot, and James De Witt Hill, navigator, both well known air mail pilots, are waiting only for a west wind of approximately 15 miles per hour velocity to aid their take-off in *Old Glory* for Rome. Their flight is backed by William Randolph Hearst and is directed by Philip A. Payne, managing editor of the *Daily Mirror*.

Old Glory, their Fokker F7 monoplane, has a single Bristol Jupiter 450 h.p. engine. They plan to carry about 1100 gallons of gasoline, and about 85 gallons of oil, which with the equipment and two pilots, is calculated to make a total load of 12,600 pounds. The fuel, it is estimated, will keep the plane in the air for 56 hours at 90 miles an hour and carry her about 5040 miles. The motor has been using on the tests only 21½ gallons of gasoline an hour at a cruising speed of 95 miles an hour and a propeller speed of 1500 revolutions a minute.

There are five tanks for fuel; four of these, each holding 91 gallons, are located in the wings. The main tank, holding about 815 gallons, is provided with a dump valve by means of which the gasoline can be emptied in 57 seconds in case an emergency landing is made. The empty tanks will serve as buoys in case of a forced descent at sea. A rubber "airraft" is in the plane in case of emergency.

The wing of the plane measures 64 feet. On one side of the cockpit is painted a Roman eagle and on the other, an American eagle. From the cockpit a catwalk leads below and to one side of the main gasoline tank to the rear compartment. The rear cabin is spacious enough to permit standing or moving about. A mattress is provided for resting. In this compartment are the radio, provisions and equipment.

The fliers are to toss a coin to determine who will handle the controls at the start of the flight. They will alternate at the controls and at operating the radio during the flight. The call letters of their receiving and sending radio set are "WRHP"—William Randolph Hearst Plane.

Contrary to their famous transatlantic predecessors, Bertaud and Hill plan to start in the afternoon. This will give them two nights over the Atlantic and assure them of a day-time landing in Rome. They plan to follow a modified Great Circle course, flying first from New York to St. Johns, Newfoundland; then on a southerly line to the coast of France near Bordeaux. From there they will cross France, flying north of the Pyrenees and passing south of the Alps, then across the northern Mediterranean, where Colonel De Pinedo and his squadron of Italian aces are to meet them and escort them to Rome. This will take them approximately 4300 miles—the longest flight in history.

Lloyd Bertaud, who was a lieutenant in the air service during the World War, is 32 years old and was born in Alameda, California. At the age of 18 he became a licensed pilot. He has been flying the night air mail between New York and Cleveland.

James DeWitt Hill, who is past 42 years of age, was born in Scottsdale, Pennsylvania. In point of service he is one of the oldest fliers in the country. He began in the old days back in 1912 under Glenn Curtiss in San Diego, California. He has spent more than 5000 hours in the air. For the last three years he has flown the air-mail between Cleveland and New Brunswick.

On the return trip the fliers plan to hop off from a point near Bristol, England, the home of the Jupiter motor.

UNITED STATES-EUROPE

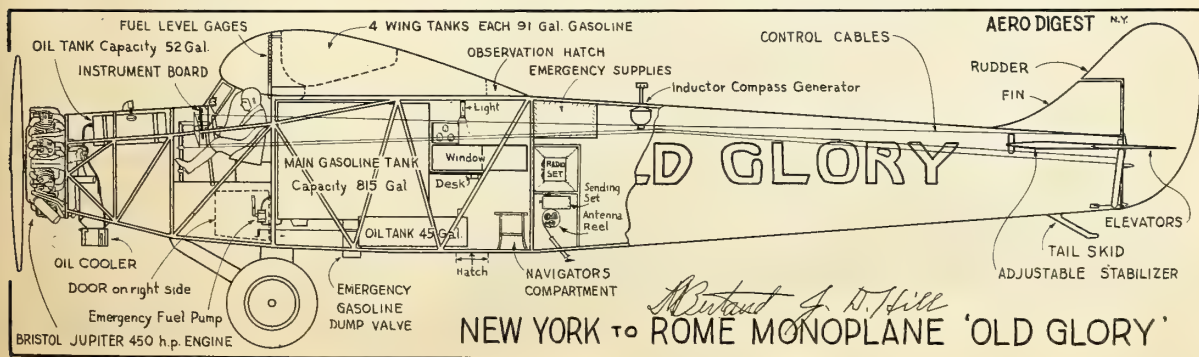
THE large Sikorsky biplane, S-37, in which Captain René Fonck plans to fly across the Atlantic is being tested at Curtiss Field, Long Island. "Ville de Parée" (City of Paris) is the name that will be given to the plane.

The strut channels, spars and ribs of the wings are built of duralumin, as is the frame of the fuselage. All are covered with treated fabric. A layer of Balsam Wool insulation, one inch thick, surrounds the body to protect the occupants from the noise of the engines and the cold temperatures encountered at high altitudes.

Twin Rhone-Gnome-Jupiter 500 h.p. motors will power the plane. It is estimated that the consumption of the two motors will be about thirty-eight gallons of gasoline an hour. Other specifications of the plane are as follows:

Upper wing span, 100 feet. Total length over all, 45 feet 6 inches. Height, 16 feet 3 inches. Tread of wheels, 17 feet. Wing area, 1075 square feet. Weight empty, 8000 pounds. Normal useful load, 7000 pounds. Normal distribution of load for commercial purposes: crew, 2 men; 16 passengers; baggage, express or mail, 1340 pounds.

The interior of the spacious cabin is practically free from obstructions and near the forward end steps lead to the pilot's compartment. At either side of these steps access is had to the baggage compartment at the nose of the ship. At the rear of the cabin is an elaborate radio set for transmitting and receiving messages during flight or while the plane is at rest. Continuous non-shatterable glass windows all along the sides of the cabin give wide vision and may be slid open for ventilation. The cabin structure has been designed for high safety factors.





The Farman twin-motored "Bluebird" to be flown across the Atlantic by Costes.

FRANCE-UNITED STATES

DIEUDONNE COSTES, French war ace and long distance flyer, and Lieutenant Le Brix, his navigator, are ready to start from Le Bourget or Villacoublay Field, Paris, for New York at the first sign of good weather.

Their Breguet 19 A2 Special biplane, named "Nungesser-Coli", is powered with a single 600 h.p. Hispano-Suiza engine, and has a maximum speed of about 125 miles an hour. It has a wing surface of 516.75 square feet, a length of 24 feet and a wing spread of 42'-7". It is the standard Breguet army plane modified for long distance flying. The range of the plane has been increased by adding a number of fuel tanks equipped with automatic drains.

It is the same plane in which Costes and Rignot flew 3514 miles from Paris to Djask last October, setting the non-stop distance record which was later broken by Lindbergh and Chamberlin.

Costes' plans were held up for a time by the refusal of the French Government to permit his army plane to undertake the over-sea flight unless structural alterations were made to permit it to float in the event of an accident. When these alterations were completed, permission was obtained for the attempt from M. Bokanowski, Minister of Air, and Minister of War Painlevé.

LÉON GIVON and Pierre Corbu, who plan to fly the Farman "Bluebird" from Le Bourget, near Paris, to New York, are also ready to hop off as soon as the weather permits. Both Givon and Corbu had many hours in the air during the war, and each has added hundreds more in piloting regu-

lar commercial airplanes between European capitals.

Their Farman biplane has a wing spread of 118 ft. 2 in., total length 59 ft., height 16 ft. 5 in., total lifting surface 1937 sq. ft. Ailerons are fitted on upper wing only.

Two Farman, 12 cylinder, 500 h.p. engines are mounted on the upper wing in tandem. Each is equipped with a four-bladed propeller and propeller reduction gear which is geared at one to two.

The total weight of the machine empty is 8816 lbs. and the load carried for the

smaller model of the new Farman type which is being constructed for carrying passengers at night on the Farman Air Lines.

The first tests of this machine showed that it would be capable of flying at least 50 hours at an average speed of 90 miles per hour. With normal load the maximum speed is 125 miles per hour, cruising speed 100 miles per hour, minimum speed approximately 50 miles per hour.

It is of the standard wood construction used by Farnam, including box spars and struts.

PAUL TARASCON, former French Navy flyer, is another contender for Paris-New York flight laurels. His Bernard monoplane, the "Yellow Bird", is equipped with a single 420 h.p. Gnome-Rhone-Jupiter engine. It is estimated to have a speed of 115 m.p.h. and can carry more than 800 gallons of gasoline, sufficient for 42 flying hours. The wing spread is 53 ft. 1 in.; length, 37 ft. 9 in.; height, 11 ft. 2 in.

The plane's weight is 3746 pounds empty.

The length of the cabin is 37 ft. 9 in. It contains two pilots' seats behind which are the fuel tanks and a navigation post



The Bernard monoplane in which Tarascon will fly from Paris to New York.

transatlantic flight will be between 9918 and 11,020 lbs. The machine is capable of flying with either forward or rear engine stopped with a load not exceeding 5510 lbs. Equipped for the transatlantic flight the fuselage contains fuel tanks holding 2536 gals. of gasoline.

This machine is a new one specially adapted for the flight and is a slightly

where the navigator will work standing. He is able to reach the pilot by a narrow passage between the gas tanks. These can be emptied quickly in case of necessity. The fuselage is covered with a special fiber.

GERMANY-UNITED STATES

LIEUTENANT OTTO KOENNECKE has completed tests on his Caspar biplane, "Germania," for his flight from Cologne to San Francisco via New York. He will take Count Solms-Laubach as his passenger, and a radio man, but will operate the plane himself on the entire flight.

The Caspar plane, which has a wood framework with fabric covering, carries gasoline sufficient for 50 flying hours, bringing its total weight to 8,800 pounds. In addition to the main gasoline tank a number of auxiliary tanks have been placed in the plane.

It is stated that in the tests the plane attained a speed above 108½ miles an hour carrying almost its full weight of 8,375 lbs. It is equipped with a 310 h.p. Junkers engine, of the 6-cylinder water-cooled type, similar to the type used by Junkers.



The German Caspar transatlantic biplane of Lieut. Koennecke.

Wide World.

PILOTS Herman Koehl, Friedrich Loose, Johann Risticz and Cornelius Edzard who were forced by storms and fogs to return to Dessau, Germany, after starting for the United States on August 14th, are planning to make a new start as soon as the weather permits.

Koehl and Loose, pilots of the Junkers monoplane "Bremen", with their passenger, Baron Gunther von Huenfeld, had flown beyond the west coast of Ireland before deciding to return. They found their way back through the dense fog and landed at Dessau twenty-two hours after their take-off.

Edzard and Risticz, pilots of the Junkers monoplane "Europa", of the same model as the "Bremen", in which they recently broke the world's endurance flight record, were forced to land back at Dessau at night after five hours over the North Sea fogs. They were accompanied by Hubert R. Knickerbocker, one of the correspondents of the Universal Service in the Berlin Bureau. The plane was badly damaged in landing and another plane of the same type substituted for the original "Europa".

Both the "Bremen" and the "Europa" are all-metal low-wing monoplanes of the standard Junkers W-33 model, built for passenger and freight carrying. The planes have a wing spread of 58 ft. 3 in. from tip to tip, with an overall length of 34 ft. 5 in. and a height of 9 ft. 6 in.

They are single motored, powered with six-cylinder water-cooled Junkers L-5 engines which develop 310 horsepower.

Unloaded the W-33 type weighs 2640 pounds. Its normal weight is 1990 pounds, and its normal full load is 4630 pounds. For the transatlantic flight both ships will carry a total load of 8140 pounds. The ships have a high speed of 115 miles per hour and a cruising speed of 97 miles per hour. The two pilots sit side by side in the dual control, glass-enclosed cockpit which is ahead of the cabin and freight compartment, separated from it by a firewall and directly behind the engine.

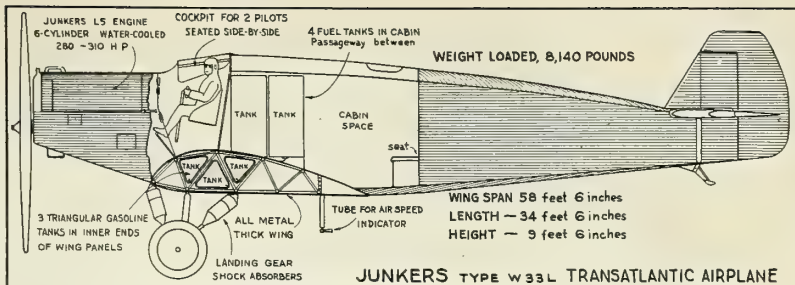
Reports from Dessau give the engines a gas consumption of 230 grams per horsepower hour. Taking the power of the engine at cruising speed to be between 280 and 290 horsepower an approximate gas consumption of between fifteen and seventeen gallons per hour is reached. This consumption will vary with the speed and load.

The "Bremen" when it took off on the unsuccessful attempt weighed 3800 kilograms or about 6600 pounds, of which 3000 kilograms consisted of gasoline.

The North German Lloyd Steamship Line, William Randolph Hearst and the Darmstaedter and National Bank are the backers of the flights.

A new pneumatic telecompass which is said to enable an airman to keep his course mechanically is to be used on both the German planes.

ERNST UDET, the famous war ace, with two companions, intends to hop off from Hamburg for New York and return to Germany this month, in a bimotored Rohrbach monoplane of 1,400 h.p.



Arrangement of the German transatlantic type planes—Bremen and Europa.

ENGLAND-UNITED STATES

CAPTAIN F. T. COURTNEY'S flight from Southampton, England to New York is still being delayed by bad weather and minor repairs. His original plans were to fly to Valencia, Ireland; refuel and hop to Newfoundland; refuel and fly to New York. He has now decided to fly over the southerly route to the Azores, refuel his tanks, fly from there to Newfoundland and New York. This change will increase his outward journey 1,800 miles. His return flight will be a non-stop from Newfoundland to Calshot, England.

Captain Courtney is making this flight to demonstrate the feasibility of an air service to America and back. Reliability has been placed before everything; all the preparations, which are now complete, have been carefully planned and it is hoped that information of great practical value will be obtained. He will use an all-metal Dornier-Napier "Whale", fitted with two Napier Lion engines, developing approximately a total of 1,000 h.p.

This machine, capable of riding out ocean storms, has a range of 2,400 to 2,800 miles in still air with a fuel capacity of 1,000 gallons contained in 15 tanks in the hull. Extra gasoline will be carried in loose cans in the event of more fuel being required to complete the journey. It has a cruising speed of 100 to 105 m.p.h., and a top speed of 128 m.p.h.; weight, empty, 3½ tons; weight, fully loaded, 7½ tons. Its wing area is 1,000 square feet; span, 72 feet; length, 55 feet and is 15 feet high.

The Napier Lion engine has twelve cylinders which are arranged in three blocks of four cylinders each, the angle between each two blocks being 60 degrees. With this arrangement a short crankshaft can be used which gives not only greater strength and compactness, but greater reliability.

Marconi directional wireless will be used

for navigation so that it will be possible to take bearings from land stations and shipping along the route. In addition, compasses and a drift indicator have been fitted in the machine. Transmitting and receiving wireless with a range of approximately 600 miles will be carried, and messages will be transmitted from time to time.

Captain F. T. Courtney will have with him Flying Officer F. W. M. Downer, who was until recently navigation instructor at the Royal Air Force flying boat station at Calshot, and R. F. Little, who has been a ground engineer at Croydon Aerodrome for some years.

ROBERT H. McINTOSH, Imperial Airways pilot, accompanied by a navigator, plans to hop off from England to New York in a Fokker F-7A equipped with a 510 h.p. Jupiter air-cooled engine. He is being financed in the venture by William B. Leeds.

CANADA - ENGLAND

PHIL WOOD, brother of Gar Wood, famous motor boat racer, and C. A. Schiller, of the Canadian Government Aerial Patrol, intend to fly from Windsor, Ontario, landing as near as possible to Windsor Castle, London, England, in a Stinson monoplane.

Wood will carry most of the gasoline in 5 gallon containers which, when emptied, will be sealed and thrown overboard. Each can will have the names of the flyers painted on it and a message inside giving their position at the time it is dropped, thereby giving clues to the location of the plane in case they become lost. The plane is an exact duplicate of the "London to London" plane. On the test flight, the take-off was 32 seconds, with total load of 4,795 pounds.

The flight is being backed by Edmund T. Odette, M.P., from East Essex, Ont., and Windsor business men.

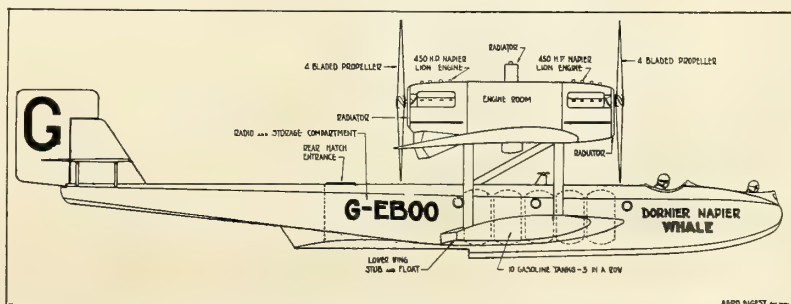


Diagram of Captain Courtney's twin-motored flying boat.

CAPTAIN TERENCE TULLY and Lieutenant James Metcalf, both members of the R. F. C. during the World War and now in the Canadian Provisional Air Service, plan to make a non-stop flight from London, Ontario, Canada to London, England in a Stinson-Detroit monoplaner. They flew their plane from London, Ontario to Curtiss Field, N. Y., on August 21st to have the instruments tested, and on the way back to London, Ont., stopped at the Stinson factory in Detroit where additional gas tanks were installed.

The plane is equipped with a Wright Whirlwind motor and weighs 2,040 pounds unloaded. There are four wing tanks with 45 gallons in each, and one 785 gallon tank in the cabin, totalling 365 gallons. Extra 5-gallon containers of gasoline will be placed in the cabin. The take-off of the plane with pilot and passenger and 400 gallons of gasoline was 2,100 feet in 32 seconds.

They plan to fly across Lake Ontario and follow an "all water" route of 2,300 miles to England.

The flight is sponsored by Charles A. Burns, president of the Carling Brewery in London, Ont., and the plane has on each side in large script letters, on a bright green background, the name of the brewery's founder, Sir John Carling.

CAPTAIN E. L. JANNEY of Ottawa hopes to be the first to fly from Canada to London and is having a Fairchild monoplaner built for the attempt. He is backed in his undertaking by an Ottawa syndicate known as the Janney Transatlantic Flights.

ENGLAND-CANADA

CAPTAIN LESLIE HAMILTON, British air taxi owner, and Colonel F. F. Minchin of the British Imperial Airways, are ready to start on their non-stop flight to Ottawa, Canada, from the Upavon Air-drome, forty miles from Bristol, England, instead of from Ireland as formerly planned, whenever the weather reports are favorable.

The plan to fly over Bath, across the Irish Sea, touching Ireland at Cahore Point, over Galway and then leave Ireland at Clifden, where they will be met by two Irish Free State planes, which will escort them out over the Atlantic. They then plan to take a direct line for St. John's, Newfoundland. They expect to be in the air for 37 or 38 hours, but have sufficient fuel for a flight of 44 hours. 750 gallons of gasoline have been loaded into their Fokker-Jupiter for the flight. They have no radio set and no floats.

Princess Lowenstein-Wertheim, 62 years of age, who is financing the flight, is to accompany Captain Hamilton and Colonel Minchin.

SAN FRANCISCO-AUSTRALIA

CAPTAIN KINGSFORD SMITH and Charles Ulm accompanied by Keith Anderson will endeavor to fly from San Francisco to Australia. They propose to use a land monoplaner as far as Honolulu, where floats will be fitted to the plane for the remainder of the flight to Fanning Island, the Phoenix group, Samoa, Fiji, New Caledonia, Brisbane and Sydney, Australia.

UNITED STATES-NEW ZEALAND

CAPTAIN FREDERICK GILES of Wellington, New Zealand, plans a 11,000-mile flight to New Zealand. He will fly from San Francisco to Honolulu, to Brisbane, to Sydney and thence to Wellington, New Zealand.

He has left Detroit in a Hess Bluebird biplane enroute to his starting point of line in San Francisco. William H. Rosewarne, Detroit contractor, is backing the flight.

PRIZES OFFERED

THE following prizes have been offered for long-distance hops:

\$25,000 offered by William K. Easterwood of Dallas, Texas, for the first flight from Dallas to Hongkong, China, 10,000 miles.

\$25,000 offered by Cleveland sponsors for the first non-stop flight from Paris to Cleveland, Ohio, to be known as the Myron T. Herrick Paris-to-Cleveland flight.

\$25,000 offered by the Philadelphia *Evening Bulletin* for the first non-stop flight from Europe to Philadelphia, Pa., before August 4, 1928.

\$25,000 by the Seattle-Tokyo Flight Fund Committee for the first non-stop flight from Seattle, Washington, to Japan.

\$24,000 offered by the Aero Club of Germany for the first German pilot to fly across the Atlantic in a German-built plane.

\$10,000 offered by the Bermuda Trade Development Board, to be known as the Bermuda Safety Prize, for the flight from New York to Bermuda, or Bermuda to New York, which exhibits the most safety factors.

SAFETY FIRST!

William S. Brock and Edward F. Schlee are using No. 4 HORNET B. G. spark plugs in their FLIGHT AROUND THE WORLD.

Lieutenant Art. C. Goebel, the winner in the North America-Hawaii Race used B. G. MICA spark plugs.

B. G. plugs are the SAFEST in flying and the CHEAPEST in service cost.



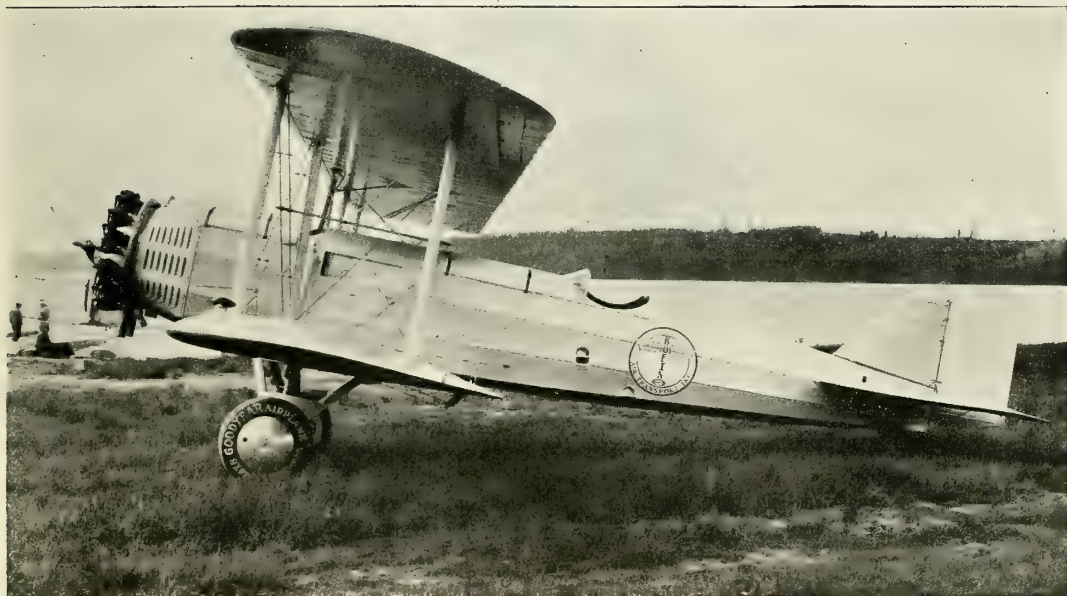
THE B. G. CORPORATION

136 W. 52nd Street

New York City

Contractors to the U. S. Government Air Services and to the Aircraft Engine Builders

THE BOEING MAIL FLEET—AND GOODYEAR



WHEN the fleet of fine new Boeing Mail Planes rolled to the line to take over the Chicago-Frisco mail service, on July 1, they were on Goodyear Airplane Tires.

The manufacturers, and the operators, of this great fleet didn't just specify "*airplane tires*," they wrote it this way: "Goodyear Airplane Tires."

If you design, or build airplanes,

if you fly them for profit or for pleasure, you have at your command the resources of a great company that wants aviation to prosper.

Goodyear makes everything in rubber for the airplane. And everything that Goodyear makes is planned, tested, and manufactured by men who know the air, and how important their work will be.

Aeronautics Department

THE GOODYEAR TIRE & RUBBER COMPANY, INC., AKRON, OHIO

GOODYEAR



AIRPLANE TIRES

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The SCHNEIDER TROPHY RACE

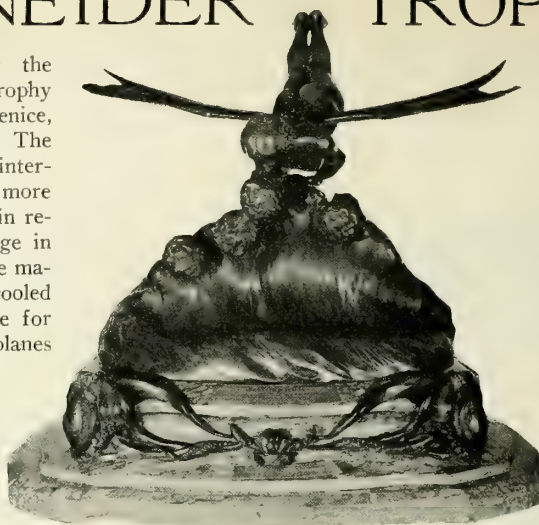
THE tenth contest for the Jacques Schneider Trophy will take place at Venice, Italy, on September 25th. The event promises to be of great interest since the planes entered are more nearly matched in power than in recent contests, and a wide range in types will compete. One of the machines is a high powered, air-cooled engine monoplane, a new type for racing. Monoplanes and biplanes will have their chance to prove their comparative merits for racing purposes. Italy, Great Britain and the United States will have contestants in the race.

The Schneider Trophy was given by the late M. Jacques Schneider in 1913 to the Aero Club of France for an annual speed contest between seaplanes of any nationality. Each country can enter a maximum of three aircraft. The course must not be less than 150 nautical miles. The first race took place at Monaco in 1913 and since then contests are held in the country holding the trophy at the time.

The trophy can be won outright by any country which wins the race three times within five years. Before machines take part in the race they must successfully pass a seaworthiness test which consists of a navigability trial and watertightness test.

This year the contest will be over a distance of 350 kilometers (188.86 nautical miles.) The closed circuit will be about 50 kilometers (26.98 nautical miles).

The start of the race is near the seaplane station on the Lido. The competitors will fly anti-clockwise round the three-legged course of 50 kilometers. Seven circuits have to be flown, involving 20 turn-



ings. The first leg is 11.4 kilometers and the first turning point is at Port de Malamocco. The second leg is 13.86 kilometers with a turning point opposite Chioggia. The last and long leg 24.74 kilometers runs to the starting point where the turning is also exceedingly sharp.

Great Britain will have three entries in the race, piloted by service pilots. In previous races, Great Britain was represented by civilian pilots. The British team will consist of six officers and twenty-seven mechanics of the Royal Air Force. Seven planes have been built and six will be taken to Venice. They were designed and constructed to Air Ministry order by the Supermarine Aviation Works (three Supermarine-Napier S5 monoplanes),

Gloster Aviation Co. (two Gloster-Napier IV biplanes) and Short Bros. (one Short-Bristol "Crusader" monoplane.) After final tests have been made at Venice three planes will be chosen from the above six.

The Gloster-Napier IV biplane has a wing span of 22

feet 6 inches. The roots of its lower wings curve up into the fuselage and its upper wings curve down to the top of the fuselage. In this way the roots of the upper panels fair into the cowling around the outer banks of the engine cylinders, giving a fine streamline finish to the cylinders. The central vertical bank of cylinders is cowled with a fairing which carries down along the top of the body forming a windshield for the pilot.

Laminated spruce is used to cover the wings which, because of their thin sections, are of the multi-spar type. Wing struts are built up of duralumin. Cooling radiators are provided on



Lieut. Alford Williams, U. S. N. and his privately-built racing seaplane.

both of the upper and lower wing panels.

Controls have a variable movement action which gives a ratio of 2 to 3 for slight movements of the controls and gradually increasing to a 3 to 2 ratio for the maximum movements.

Monocoque construction is used in the streamlined fuselage. The engine mount is of steel tubing.

Removable fuel tanks are provided in the fuselage. The oil tank with a cooler is attached below the engine, built in as part of the fairing. A header tank carries the water as well as the gravity-fed fuel, located between the engine and the wind shield. Duralumin is used for the construction of the twin floats. The propeller is also of duralumin.

The Supermarine Napier S5 is a low-wing monoplane with wing surface radiators having a flat outer surface. The wing is built up of wood and covered with laminated spruce. Over this surface the radiators are placed.

Metal is used entirely for the fuselage. The skin is arranged to carry practically all of the stresses. Even the engine mount is carried by the skin which is provided with a cantilever extension forward of the fire wall.

Specially constructed oil coolers are attached to the sides of the fuselage.

The cockpit has a fresh-air duct to guard against the accumulation of exhaust fumes.

Floats are built of sheet duralumin, treated to withstand salt water corrosion. Fuel is carried in the starboard float,

being fed up to the gravity tank by an engine-driven pump.

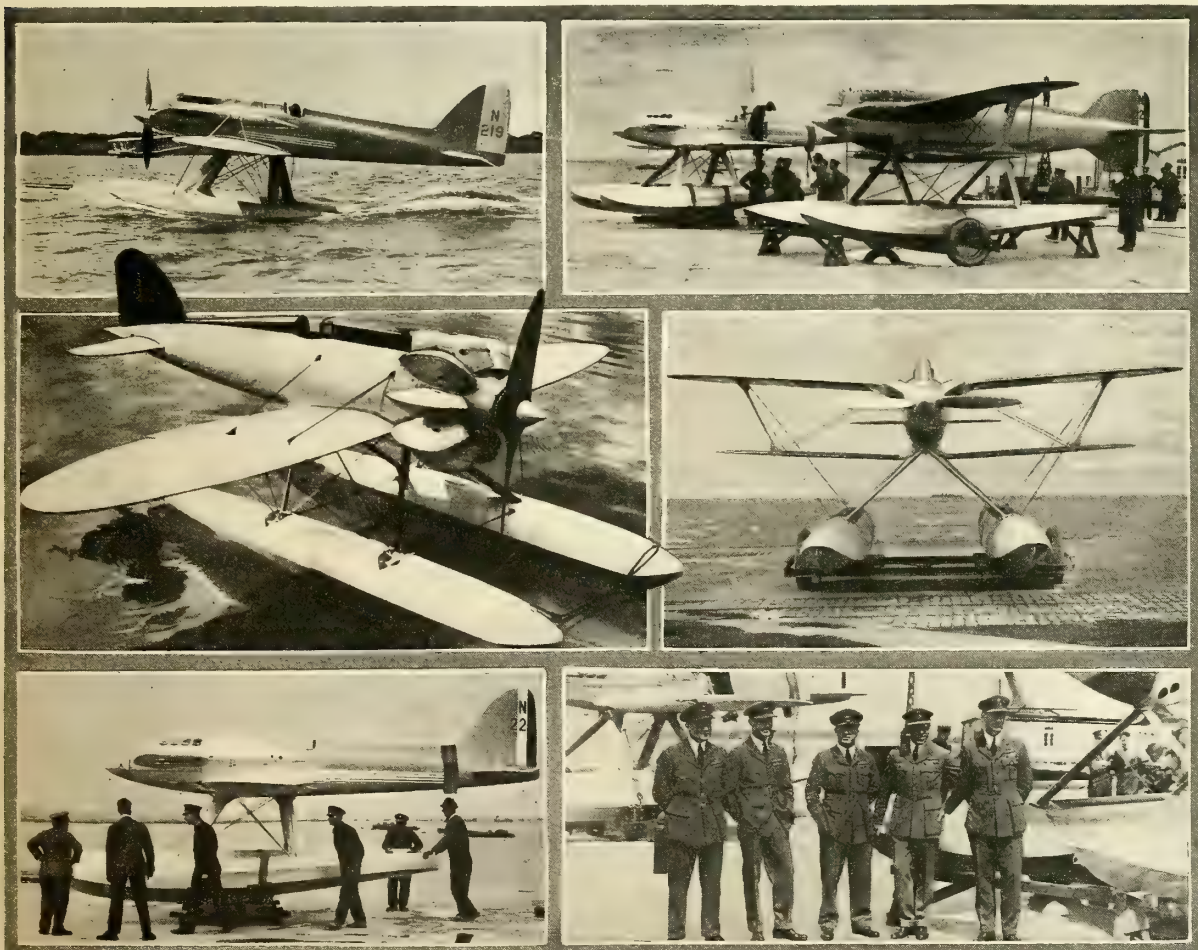
It is reported that the Supermarine S5 has unofficially exceeded the high speed record for land planes on a straight course.

The engines used to power the above planes are a development of the standard Napier "Lion" which is known for its dependable service. It is water-cooled and its twelve cylinders are arranged fan shape in blocks of four cylinders each. The frontal area is remarkably small for its power and its shape lends itself admirably for streamline cowling. The power is reported as being about 1000 h.p. although no figures have been given out officially. On account of the reduction gear, the propeller is run at a speed much reduced over the crankshaft speed. This results in better propeller efficiency than the direct drive.

The "Crusader" was built by Short Bros., Ltd., and provided with a Bristol air-cooled "Mercury" engine.

The "Crusader" was designed to test the possibilities of seaplanes of high speed racing type when fitted with radial air-cooled engines. It was an experiment not previously attempted elsewhere and it has proved to be of value.

Although it is known that owing to their large frontal area radial engines offer greater air resistance than the best water-cooled engines for racing purposes there are other compensating advantages of a practical nature which make the air-cooled engine particularly interesting when applied to high speed machines. (Continued on next page.)



Great Britain's challengers for the Schneider Trophy—Supermarine monoplanes, Gloster biplanes and (center left) the Short "Crusader" monoplane. The racing team (l. to r.) Fl. Off. H. M. Schofield; Fl. Lt. O. E. Worsley; Fl. Lt. S. N. Webster; Fl. Lt. Kinkhead and the officer in charge, Sqdn. Ldr. L. H. Slatter.

One such advantage is the very low weight per h.p. which affects the weight of the whole machine, and gives it an astounding climb and ceiling. In flight, the Short-Bristol "Crusader" is probably the lightest loaded machine per h.p. in existence. The weight of the whole structure with the engine fitted is less than what was considered a reasonable weight for the engines alone in the earlier days of aircraft development.

Great attention was paid to the position of the pilot in order that he might be as near as possible to the center of gravity and have a perfect view in all directions. The fuselage is monocoque in form, finely streamlined. It is constructed in the main of double plank mahogany but the forward part consists of steel tubing to take the engine mounting.

The "Mercury" engine is a development of the "Jupiter" air-cooled radial but the power developed is considerably greater than the output of the "Jupiter." The weight for h.p. developed is remarkably low. It is probably the lightest aircraft engine in the world in relation to the h.p. developed.

Considerable experiments have been conducted to reduce the resistance while at the same time maintaining efficient cooling for the cylinder heads. The result is a series of metal "hats" which have effectively reduced resistance, and which make the engine appear as if it were a crusader in armor.

No information is available at this time as to the Italian entries but it is known that no effort has been spared by the Italians in developing a racer which they expect will win the coveted trophy. It is reported, however, that twelve specially built Fiat engines have been produced for the Italian racers and six have been destroyed in tests of the new racing planes, an indication of the terrific strain they are being put to in getting the maximum power from them.

The United States will have a lone contender for the Schneider Trophy—Lieutenant "Al" Williams. No U. S. Army or Navy planes will compete and Lieutenant Williams will represent the United States as a personal civilian enterprise, the cost of the venture being defrayed by friends of Williams who believe he is able to bring the speed honors back to the United States. Lieutenant Williams' plane is described in detail elsewhere in this issue.

HISTORY OF PREVIOUS CONTESTS

1913. Monaco, France, April 16. Won by Maurice Prevost of France (Deperdussin monoplane-Gnome 160 h. p. engine). Speed, 45.25 m. p. h. Four contestants. American entrant, C. T. Weyman.



Course of the 1927 Schneider Trophy Seaplane Race.

1914. Monaco, France, April 20. Won by C. Howard Pixton of Great Britain (Sopwith airplane-Gnome 100 h.p. engine). Speed, 86 m. p. h. Nine contestants. C. T. Weyman and Wm. Thaw represented the United States.

1915-1918. No contests during the World War.

1919. Bournemouth, England, September 11. Won by Janello of Italy (Savoia airplane-Isotta engine). Speed, 124.89 m. p. h. America not represented. Victory disallowed on account of infraction of rules. Owing to fog competitors did not cover the exact course, accounting for high speed recorded.

1920. Venice, Italy, September 21. Won by Commander I. Bologna for Italy. (Savoia S19 airplane-Ansaldo 470 h. p. engine). Speed, 106.7 m. p. h.

1921. Venice, Italy, August 7. Won by G. di Briganti for Italy (Macchi 7 airplane-Isotta 260 h. p. engine). Speed, 110.9 m. p. h.

1922. Naples, Italy, August 12. Won by Captain H. C. Biard for Great Britain (Supermarine Sea Lion II-Napier Lion 450 h. p. engine). Speed, 145.7 m. p. h.

1923. Cowes, England, September 28. Won by Lieut. David Rittenhouse, U. S. N., for the United States (Curtiss CR3 biplane-Curtiss D12A h. p. engine). Speed, 177.38 m. p. h.

1924. No contest. British entry crashed in trials and American and Italian entries withdrew from the contest by mutual consent.

1925. Baltimore, Md., United States, October 26. Won by Lieut. James H. Doolittle for the United States (Curtiss R3-C2 biplane-619 h. p. Curtiss V1400 engine). Speed, 232.573 m. p. h.

1926. Norfolk, Virginia, United States, November 13. Won by Major Mario de Bernardi for Italy (Macchi monoplane-Fiat engine, 800 h. p.) Speed, 246.49 m. p. h.



Last year's winner of the Schneider race, the Italian Macchi monoplane; speed 246.49 m. p. h.

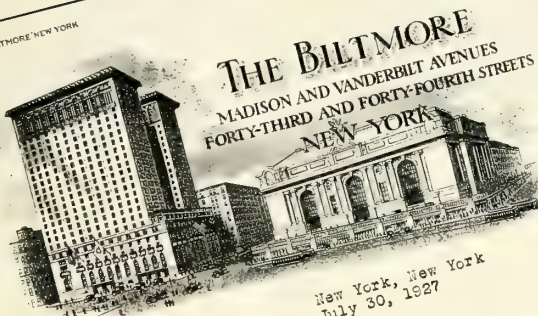
Chamberlin~

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JOHN MC E. BOWMAN, PRESIDENT

New York, New York
July 30, 1927

Mr. H. Clausen
The American Oil Company
American Building
Baltimore, Maryland

Dear Sir:

Upon my return to New York, I want to take the opportunity to thank you for your cable messages received at Berlin, congratulating me upon the successful completion of my transatlantic flight and I in turn want to congratulate you and your Company on the excellent quality of your Amoco-Gas which I used on my trip across.

With the very limited fuel capacity of the Bellanca plane "Columbia", I wanted to be sure to select a gasoline that would deliver the maximum power per gallon and at the same time offer the greatest fuel economy.

After exhaustive tests with a number of competitive products, we selected your Amoco-Gas.

As you know, we had on our flight very troublesome headwinds clear up to Newfoundland and over the Atlantic we were at times compelled to climb up to 21,000 feet altitude and again to drop within a few hundred feet of the ocean in order to dodge heavy storms. From the time we reached the British Isles until our landing at Eisleben, Germany, we were lost in heavy fogs throwing us considerably off our course, so that the actual distance flown amounted to about 4400 miles.

Throughout the entire trip our Whirlwind motor never faltered once. I attribute the fact that we were able to cover the above distance and remain in the air for more than 43 hours to the quality of your product.

Sincerely yours,

THE AMERICAN OIL COMPANY - BALTIMORE, MD.

AIR—HOT AND OTHERWISE

THE Powers in Washington had a brief attack of sanity and foresight (Heaven save me from the men who call it "generosity"—it is not a generous act to buy cartridges which your gun may need to save you from the thief; it isn't for the gun you do it; it's for yourself). But like most attacks of Washington sanity it was short, if sweet, and therefore leaves much to be desired. We are grateful for small favors, but we're after what we're really entitled to. We're after it and going to get it because if we do not the future history of the United States will record unpleasant consequences.

The time is close at hand when the friends of aviation won't be begging Congress—they will be electing it. Presently the dodo with a wingless mind will be recognized as the sort of bird unqualified to roost beneath the Dome at Washington. The American eagle is our national bird. He flies. Congress seems often to mistake him for a woodchuck and this error percolates out of the capitol, floats down Pennsylvania Avenue as asphyxiating gas might and puts the "experts" in the various departments into an even sounder sleep than that habitual to them.

The five-year expansion program for the Air Services regarded in some quarters as a piece of generosity, really is precisely as generous an act as the purchase by an individual lawmaker of a new pair of pants after a neighbor's dog, recognizing him as a public peril, has deemed it good canine American citizenship to mutilate that portion of his original nether garments which would be nearest to a pursuing lion if worn by him whom he pursued.

Let the whole air brotherhood eliminate all silly thought of gratitude for the few things done. It will make it easier for us to load up and go gunning after individuals who are so incredibly shortsighted as to fail to realize the true importance of American air development.

Pat lawmakers upon their backs, and re-elect them only when a good job is well finished, not when it has been only rather indolently and tardily begun. The Five Year Program is a good job, of the sort to be demanded by the people of this nation. But it is incomplete. It needs some additions.

The Air Corps Reserve is the device which will make the Army Air Corps an effective thing when trouble comes. Without its full and skillful development, encouraged by the grave men on the hill under the leadership of the intelligent among them, the Army Air Corps will be left in a position guaranteeing virtual uselessness in time of need. It's fine to have an Army Air Corps; it would be madness to have one large enough in time of peace fully to protect us in a war; but it is every bit as silly not to provide that Air Corps with a competent, selected and to some extent trained reserve from which to draw if the sad day of grim need arrives.

The fact that when the great war broke England had no Army except a highly trained small body without even partly trained reserves cost the people of Great Britain not less than a million splendid lives. "The Old Contemptibles," as Kitchener's small and glorious band was called in almost idolatrous paraphrase of the mistaken Kaiser's foolish descriptive phrase, did, in real truth, save the day for England, giving the British Empire opportunity to begin its preparations in desperate haste. But ask any man who knows to-day what lack of a well trained and reasonably

*Eagles and Woodchucks
Say it with Music!
S. O. S.'s and Such
Critics versus Dreamers*

By Frank A. Tichenor

equipped reserve cost England in money, lives and prolongation of the agony of war. Billions of money, multitudes of lives, years of tragic, terrible fighting which would not have been necessary if behind the Kitchener army had been the right sort of reserve. If we merely equip, train and support the Army Air Corps and are

forced suddenly into a war (which God forbid, but which He won't if history runs true to form) we shall be talking of that Army Air Corps in days to come with voices tremulous from deep regret. It will form America's sacrificial tribute to shortsightedness as Kitchener's Old Contemptibles formed England's.

The Army Air Corps Reserve is as important as the Army Air Corps itself. The fact is that neither rightly can exist without the other.

Reserve Corps officers and pilots each must have more than two weeks annual training. We must go much further than the present plan of selecting from the corps a chosen few for one or two year details.

Even more important is better treatment of non-rated officers. Under the present plan such men go to camp each year for a brief period, which gives them a vacation from their routine lives, but this is spoiled for the best of them by a sense of its futility. They do not learn to fly in the few weeks allotted—they cannot do more than learn to twiddle their thumbs. If war came suddenly even these men, blessed though they may be by a lick and a promise from the military regulars, still would require months of costly instruction before qualifying for any sort of useful service as specialists or pilots.

Every national interest—the interest of our national defense and at the same time that of our commercial aviation—would be served with high intelligence if those among these men who are physically and mentally qualified should be sent to the primary, and, if possible, the advanced military flying schools and made into actual pilots.

Some would not qualify. Willing spirits sometimes are held back by individual handicaps. Such men might be sent to specially organized schools for observers or ground officers. Exhibiting their possession of the patriotic impulse and the fighting man's initiative by their willingness to serve at all, under not very encouraging circumstances, they should be recognized with gratitude and trained to something, anyhow.

But two weeks! Eleanor Glyn proved to the world that three weeks can do wonders with a raw love affair. It would take a writer far more passionate and daring than I am to prove to anyone that two weeks can do wonders with a raw aviator.

The group of admirable and ambitious young patriots who at present form the vast bulk of the Army Air Corps Reserve are non-rated and non-trained. That means that they're non-useful. And that, in turn, means that the framers of the scheme produced non-sense.

If Congress should appropriate sufficient funds to give the primary course of training at least to such non-rated Reserve officers as can qualify mentally and physically, a step in the direction of real commonsense would be achieved. To compel the Corps continually to refuse the gift of training to aspiring defenders of the faith and potential saviors of the country because of "lack of funds" is to make a laughing stock of what

(Continued on page 354)

The Second-Splitter



Odis Porter timing the 1926 Schneider Trophy Race. © Rosenfeld.

THE way of the timer is hard—and fast. Ask Odis Porter, he knows. Or, if you happen to

hail from Missouri, worm your way into the judges' stand the next time a high speed event is being held and watch Odis do his stuff. It's almost worth being from Missouri to see him at work with his famous second-splitting machine.

Of course he's got it worked out now to a point where it's plain science with him but it's a mighty engrossing science and one that keeps Porter on his toes from the bang of the starter's gun to the dropping of the flag that heralds the birth of another record. It keeps a man so busy he hasn't time for anything else—not even the race itself.

"Never seen a race in my life," Mr. Porter declares with characteristic little wrinkles about his eyes and a keen twinkle in them. "Never get a chance to see what's going on; keeps me too busy timing 'em."

This from the man who has timed on an average of ten or a dozen major speed events a year since 1910 with his highly specialized electrical timing device which is capable of catching such minor nuances of speed as the one-four-hundredth part of a second. A fellow has to keep his mind on his fractions when they get as microscopic as all that. Hence Odis's lack of time for watching the fine points of the race or really knowing who's winning. He rebelled once, but it availed him nothing.

That was eight or nine years ago and it happened at Uniontown as a great many other things have that are chronicled in speed history. Mr. Porter has officiated at so many automobile races and been a witness to so much of the enthusiasm of the racing fans he was determined to sit quietly in some obscure spot for once and see for himself what all the shouting was about. So he turned up his overcoat collar and snuggled down into it until he was sure he was out of sight of everything except the speedway out front.

But it was no use. A speedway official spied him while the racing cars were making their preliminary runs and he was hauled into the judges' stand. After that all Odis saw was an occasional flash of wheels and painted numbers past the timing wires. His one consolation was that the Sunday papers had a good account of the race.

Mr. Porter has timed automobiles, boats, airplanes, seaplanes and even swimmers. About the only thing he hasn't clocked for a world record is the human race and the traditional one between the tortoise and the hare.

By C. B. Allen

One reason is that he's never been asked to officiate and the other is that neither of these events is strictly on the level!

He has calculated speeds in nautical miles, statute miles and kilometers and his findings have been so accurate, even on the distant side of the decimal point, that the French savants who formulate the rules of the Federation Aeronautique Internationale, after the customary waving of arms and wasting of adjectives, have accepted them as final and authentic. Even so the French scholars do not quite fully understand how Mr. Porter arrives at his results although they admit the correctness of his figures. His methods baffle them because they are rather simple and direct; their own belief is that complicated formulae and labyrinthian solutions lend more dignity to world records.

Mr. Porter's activities as the recognized official timer for the chief American speed events have taken him to all parts of the country. He has timed races at Los Angeles, Chicago, Detroit, New York, Havana, St. Louis, Dayton, Philadelphia, Miami, Cincinnati, Minneapolis, and a score of other places less well known. It was Odis A. Porter whose eagle eye and second splitting timing device spelled out the lap by lap defeat of the Navy's Schneider Trophy Race team last fall at Norfolk. It was he who caught the record-breaking circuit of the triangular course by Major Mario de Bernardi, captain of the "Flying Fascisti" team sent here from Italy with express instructions from Mussolini to bring the Schneider Cup back with them. Later it was Porter who timed de Bernardi over a three kilometer straightaway for a new official seaplane speed record.

He has timed every Pulitzer Trophy race except the first and he has timed all Government aircraft speed tests since 1923. He heard a high Air Service official predict in 1923 that 200 miles an hour was the "absolute limit" for airplanes and he has since seen the record shoved steadily up until it has covered more than three-fourth of the road to 300 miles an hour. Already he has charts worked out for use with his timing machine up to 350 miles an hour and if necessary he says he can shove them up to 500!

"The fastest thing I ever timed?" Mr. Porter repeated the question, "Why I guess it was Lieut. Maitland at Wilbur Wright Field. He had a strong wind and he made 281.39 miles an hour flying with it. The slowest airplane? About sixty miles an hour, I guess.

"Swimmers are the slowest racers I ever timed and I've kept the clock on Gertrude Ederle and Johnny Weismuller, too. The longest race I

(Continued on page 276)

AERO DIGEST

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No. 3

IT'S HERE TO STAY

ARE we down-hearted? No! A friend has just crossed this great American continent. At five stations which he passed during the broad glare of daylight and when he happened to be looking from the car window, planes or other things suggestive of air-effort were in sight.

In the United States that thing is happening for which AERO DIGEST so earnestly has striven—air-mindedness of the general population: the businessman, the average citizen, the ambitious youth, the rich sportsman.

This will mean far more of American air development in years quickly to be lived than Government subsidies are giving to Europe. Our planes will take off from their own fields and not from Government department desks. They will fly on their own wings, not on paper pinions patched together with Government appropriations and sure to disintegrate the moment a political quarrel or official scandal holds up one of these appropriations. They will land on their own fields, so situated as to be convenient to the businessmen and constructive citizens of the United States.

That will mean a real air-effort, economically sound, certain to grow with unexampled speed because it will become a public utility and not a public charge.

Armies and Navies beg for what they get or go without. Business takes that which it wants and when it wants it. American commercial aviation is the businessman's and not the politician's—and for that thank God! It needs every ounce and detail of help the Government can give it. In general our Government is progressive, farsighted, admirable. But it is notably like the Lord in Heaven. It helps those who help themselves. In Europe Government dictates to commercial aviation. In the United States commercial aviation presently will be dictating to the Government.

OUR HAT IS STILL OFF

LATELY in this magazine we took off our hat to Brigadier-General "Jim" Fechet. The weather has been warm, the General has continued active and so we have not since returned it to our head. Which now saves the work of once more doffing it. When we last wrote our pleasant thoughts about this splendid soldier who has been appointed head of the Army Air Corps to succeed Major-General Mason M. Patrick on the thirteenth of December, when the age-limit retires the latter gallant officer at sixty-four, we did not know that General Fechet had in advance declared that he would serve one term, only, refusing re-appointment if it should be offered.

At his request Secretary of War Davis now has made his determination to retire at the end of his first four-year term a matter of record, and, also at General Fechet's request, has approved a similar policy with regard to re-appointment of the three assistants to the Chief of the Air Corps. This naturally peps up the whole Air Corps, assuring, as it does, a full field and a free one for ambition and promotion.

General Patrick served one full four-year term and was re-appointed for another in 1925. We all are grateful for this working of the situation in his case, for he has been an able and constructive officer, but the course which General Fechet has taken is a splendid gesture by an admirable and public-spirited officer whose first thought, obviously, is for the good of the service rather than his own gain and comfort.

It has been the habit of all Army officers to dig in and stick as long as possible when a fine trench has been found, as it has been that of our naval notables to surround themselves with precautionary extra hooks and cables when they have got berth in a good anchorage. As Secretary of War Davis says: "The principle of rotation in office in peace time will be of benefit to the service." Everything that General Fechet ever has done has been of benefit to the service. Never having been a politician, perhaps because he did not have West Point training, he has ever been an admirable patriot.

THE MELTING POT

HAVE you ever stopped to think that aviation supplies the only means of transportation and cheap communication which possibly can destroy the last vestige of sectionalism in America? That is the fact. The work magnificently begun by the railways, the telegraphs and postal service in the years immediately following the Civil War and prior to the World War, had been effective. But even railway speed is not now fast enough in passenger and commodity delivery, the telegraph and telephone are not sufficiently comprehensive in communication-service to supply all that we have needed to make us absolutely one in the true sense of the word, to render us forever and completely indivisible in thought and psychology as well as in political union.

An approximately forty-hour mail, express and passenger service between coast and coast, a comparably fast service between extreme north and extreme south, with intervening areas all served from and to all other areas at similar speed and high efficiency, will be the final influence necessary to make our union perfectly compact, to eliminate not only sectional prejudices but pernicious sectional rivalries.

When the founders of this nation planned its future they did not foresee the airplane. But the things they did hope for and foresee, fight for, bleed for and in some cases die for, never will be realized in their entirety until the plane has an opportunity to completely do its service.

WHO IS TO BLAME?

THE Dole Pacific Flight has passed and has left with us many sorrowful memories. Our sympathy, in unlimited measure, is extended to the families of these courageous and heroic pioneers who gave their lives for the love of aviation.

Mr. Dole made his generous offer to encourage aeronautics. It was the \$35,000 purse that enabled the contestants to secure sufficient capital to design and build the planes flown in the contest, and it was made before the Pacific had been crossed by airplane.

The "I-told-you-so's" are now trying to find someone to blame for the disasters that occurred. There is no one at fault. Everyone did his best. We have learned much and will profit by it. Experience is always costly.

To blame either Mr. Dole or the officials connected with the flight is poor sportsmanship. The Orteig prize purse gave us Colonel Lindbergh.

There is no one to blame.

A NOD AND A WINK

ONCE upon a time—this was years and years ago, when I was a very young man—I used to be a farmer who specialized in one crop—wild oats. I used to sow these oats regularly, every Saturday night, and with such skill that I sometimes reaped a bountiful harvest on Sunday morning, due to the extreme care I took in properly irrigating the crop. Upon one occasion, after a more than usually moist agricultural evening, during which I had labored to such an extent that my mind was utterly exhausted and blank, I awakened in the morning to find myself snugly ensconced in the local hoose-gow. The warden, a genial soul whose red and bulbous nose bore mute witness to his own enjoyment of many, many evenings like mine, looked me over with a very quizzical light in his eye, and remarked, “Well, me bhoys! Ye’ve gone an’ got yerself in—now, who th’ divvle’s goin’ t’get ye out?”

I was reminded of that question in Newfoundland, upon the conclusion of our search for Nungesser and Coli in the seaplane *Jeanne d’Arc* of the Daniel Guggenheim Expedition. We got ourselves into Newfoundland—and the devil himself didn’t seem able to get us out. For two solid, sickly, dreary weeks we were stuck at St. Georges in a fog. And when I say fog, I mean FOG—miles and miles of dull, leaden-colored vapor that came drifting in on a gentle southerly wind from the Gulf Stream until the Straits between Newfoundland and Nova Scotia were packed full. Every day we received weather reports from various places, until the telegraph operators were as fed up as we were. And still there was no change in the weather. Sometimes it was clear at St. Georges, and we took off for a try. But each time we hit Cape Ray, sixty miles south, we encountered a heavy blanket of fog, and returned to the only harbor on that coast.

The natives declared that it was the worst season for continuous fog they had seen, and attributed it to the fact that some girl in town, loath to see St. Georges’ only interest depart, must be keeping a black cat under a tub. For it is a well-known fact—at least to the more superstitious natives—that if you want foggy weather all you have to do is to put a black cat under a tub. The brides of fishermen frequently use this method to keep their new husbands in port, though it has been remarked that black cats belonging to the older married women are invariably at liberty.

Whatever the reason for the fog, the result was that we were steadily building up a reputation as the world’s slowest pilots. I don’t think anyone ever waited so long to go 1,300 miles. We’re putting in our claim as absolutely the world’s slowest pilots with the National Aeronautic Association—the world’s slowest aeronautic association—and hope to receive wrist watches from dear Porter Adams, in person. If that association has a wrist watch they might as well present it to someone. They don’t need to know the time—they’re not going anywhere. Except possibly from their social office in H Street to their business office in the Navy Building—for orders and a sweet smile from an admiral.

After two weeks’ wear and tear on the seat of our pants, for all we did was to sit, a Sunday dawned clear and beautiful. And on that day, as the Newfoundland telegraph

*At Fog, the General Staff, the
N. A. A., Mr. Levine and
Other Aerial Handicaps*

By

by Caldwell

offices were closed for prayers, we couldn’t get a weather report from Cape Ray or Nova Scotia. But we figured that if we waited for a good report we’d be feeble old men before it came—and we weren’t any too vigorous even then—so we decided to hop off and take a look.

Down the coast we flew under brilliant blue skies, though just off shore lay the same familiar bank of fog. When we got to Cape Ray we had climbed to 7,000 feet. Right ahead of

us, as far as we could see, was a solid mass of fog and cloud, sitting right on the water and extending up to our level. As we couldn’t see the Nova Scotia coast we couldn’t tell if there was a clear strip near shore, or if the entire North coast, and the Bay of Fundy as well, was wrapped in fog. And if we flew over there and found the North coast and Fundy full of fog, we wouldn’t have enough gas to take us back to Newfoundland. Besides, if we had been forced to land in that fog-covered sea, either through motor failure or through running out of gas, it would possibly mean good-night. Even if we had landed all right we might have drifted for days before we were picked up or blown ashore.

We talked it over—and we didn’t like the look of it at all—but we decided that our annoyance at going back and waiting some more was exactly equal to our fear of going forward—perhaps to find fog all over the coasts and be forced eventually to land blind in it. So forward we went. We were at about 7,500 feet then, with the tops of the clouds right beneath us. Very beautiful, too. But I was sort of soured on clouds and got no pleasure from them. All I was doing was to peer ahead for the first sign of Nova Scotia. I never wanted to see Nova Scotia so much in my life before—especially when we lost sight of Newfoundland.

When we got about half way across the straits, which are 75 miles wide, the clouds seemed higher and thicker than ever over on the Nova Scotia side, and more vindictive looking, if you know what I mean. But, as Chamberlin so aptly remarked of a much more dangerous situation, it was just as far back as it was ahead, so on we went, wondering idly if the fog had closed in back in Newfoundland and hidden the only harbor we could return to—if we had to return.

Then we saw the mountains of Cape Breton sticking up on the horizon—and very, very nice they looked. Then, after twenty minutes more, we saw Cape North. It was clear as a bell there, with the fog lying off-shore a quarter of a mile. I never thought I’d be especially delighted to see a mere cape, but I was. Prettiest cape I’ve seen. And even the fog and clouds, banked up solidly behind us, looked absolutely beautiful. Funny I hadn’t noticed the beauty of them before. I guess I hadn’t been in the mood for them, that’s all.

We flew along to Pictou, refueled, and stayed the night. Next morning we got going before the weather reports did—and landed at Pugwash soon afterwards, because we had found the Bay of Fundy packed with the old familiar fog which flowed inland for several miles. I wired Mrs. Cy, “World’s slowest pilots are parked at Pugwash. Who’s president down in that country of yours now?” I signed it “Lord Pugg, of Pugwash.” I really felt I’d been long enough in Newfoundland to be made a member of the

codfish aristocracy, so I gave myself a title.

Next day we started about noon—heavy fog all morning—and landed for gas at St. John, where I wired my boss, “Slowly but surely I am about to discover America—Christopher Columbus.” But she told me later that I flattered myself, and that Chris had made better time in the *Santa Maria* than I had made in the Jonah’s Ark. However, we pushed along and landed for the night at Rockland, putting up, appropriately enough, at The Samoset—accent on the “set” for about all we’d been doing for three weeks was to set. And I’m hanged if next morning wasn’t foggy, too, right until noon. It was discouraging. Here we’d been four days coming from Newfoundland to New York—and we were only at Rockland. We finally sneaked down that coast, with a visibility of nearly nothing all the way, went slap through one of the heaviest rain-storms that ever hit Long Island Sound, and landed at last in Port Washington, with the world’s record for slow air travel clutched firmly in our mitts.

So with all this frantic flying of everybody, here and there, breaking long-distance records, endurance records, and publicity records, we broke the sitting still record for all time. We took it away from Sitting Bull. And we won it against keen competition. There was Wilkins up North—he was runner-up for the title we now hold. But he’ll have to be content with the world’s long-distance walking record for pilots. He flies out and walks back. What’s happened to him, anyhow? I wonder if he’s still up there—he’s walked right out of the papers. And then there’s Captain Courtney—another gent who’s been waiting to go some place for a long, long time. And—why, shucks! I forgot the General Staff! They’ve been waiting *ten years* to hop off and do something in flying, and they haven’t even started yet. Why, hang it all! They’ve got the world’s slow-motion championship away from me.

NOW that I’ve got back to my little apartment in New Hokum on the Hudson I’m able to read back numbers of AERO DIGEST and see what’s happened in the aeronautical world since I’ve been away in Newfoundland—you can find it easy enough but you can’t lose it. The fog won’t let you.

Well, I guess the funniest thing that’s happened is Clarence Chamberlin’s handicap flight to Berlin. After that flight I’d say Chamberlin could fly across oceans carrying a full-grown white elephant as passenger—look at the practice he’s had. I don’t think he’d even notice the difference, except that the elephant wouldn’t argue with him. And the elephant wouldn’t carry parts of the magneto around in his pocket so his pilot wouldn’t fly off and leave him. You know, Charles Levine has got his suit all out of shape on one side, carrying motor parts; and Doc Kincaid is at work designing a suit for Levine’s next flight—it’s going to have special pockets so Levine can carry the whole motor and one of the wheels. And if that won’t do the trick he’ll just take the plane apart and let his family carry it around with them until Charlie is ready to fly in it again.

They say that Levine only flew across there to make sure of getting the airplane back; but Elliott White Springs, writing in *Liberty* about Levine, says, “After he forgot to kiss his wife good-bye, he was so scared he kept going for 3,800 miles before he dared to stop.” And I suppose, Elliott, he only got into all those arguments so he’d feel at home over there. He’s the world’s champion arguer—if he can’t argue in his own language he’ll hire an interpreter and keep right on going.

Levine got the cream of the publicity—and then it went

sour on him. And that shows the advantage of the official ambassador over the “unofficial” ambassador—you can *recall* the official ambassador.

The United States sent a battleship to France to bring back Lindbergh. The government should send the whole fleet over to bring back Levine. And if he won’t come, they should send Peggy Joyce after him—she always gets her man.

After all, Will Hays, the Czar of the Movies, has the right idea. He keeps the originals in Hollywood and just sends over moving pictures. Because pictures can’t talk. That’s where Levine would have made a hit—Silent Drama.

There wasn’t any need of Levine going, in the first place. We could have sent Chamberlin by air, and then simply cabled Levine’s picture. And if they didn’t like it, they could have torn it up. Or if they’d really wanted Levine we would have been glad to export him.

If Levine ever offered me a job flying for him I’d say, “Charlie, I know you mean well—I know you do. But you’ve got to pay me \$25,000 advance damages—because I know you’re going to stir me up so I’ll feel damaged to at least that amount.”

What he really needs is some sensible, reasonable man who will say to him, “Look here, Charlie, you let me do your thinking and talking for you; and you just sit there and ride—silently and unobtrusively. When you argue and squabble you are the worst advertisement America has ever sent to France. You do all you can to foster that unfortunate impression that Europeans generally have of Americans—that they have too much money and are looking for vulgarly ostentatious ways of displaying it. The noise you make about your exploits is not tending to promote either aviation or the friendly relationship between Europe and America—and, after all, you were merely a passenger, indebted to another man’s skill for your flight to Germany. You are a brave man—everybody respects you for that—but the only way for you to be popular is for you to keep on flying all the time. Just keep sitting up in the air, constantly, and never land—never. That’s where you queer yourself—landing.”

IF you have any doubts about commercial aviation’s needs for large multi-motored ships, such as those which Mr. Ford is building for transport work, just park yourself in a single motored plane, above 7,000 feet of fog and clouds piled solidly down on a sea that few steamships traverse—and then tell me how you feel while flying behind one motor. You may have the most reliable engine in the world—such as the Wright Whirlwind that we had in the *Jeanne d’Arc*—but it’s no more reliable than one engine can be. No matter how you add it, or subtract it, or divide it, the answer to all your figuring is still the humble figure 1. And that’s at least two too little—and perhaps five too little.

I know that gentlemen have crossed oceans behind one motor. They’re very brave gentlemen, and I doff my hat to them, and bow respectfully. Crossing oceans behind one motor is very glorious—but it is not commercial aviation. It is no more than a feather showing how the wind is blowing—and the wind is blowing trans-ocean airlines our way, eventually, but not just now.

In fact, crossing oceans on any such craft as we have today—even those with three engines—is a stunt, precisely as Monsieur Bleriot’s first crossing of the English Channel by airplane was a stunt when he did it in 1909. His airplane was no more fitted to undertake the present London-

(Continued on page 350)



All metal surfaces of Col. Lindbergh's Ryan monoplane were Nitro-Valsparred, while its wood surfaces were finished with Valspar.



© Times Wide World

In its historic battle with the elements, Byrd's giant Fokker contributed immeasurably to the science of air navigation. Wherever varnish was required Valspar was used on this ship.



P. & A. Photo

Chamberlin's Bellanca plane, the Columbia, from propeller to tail skid, was Valsparred, of course.

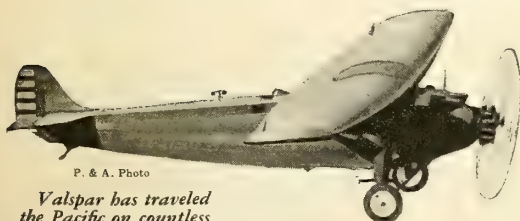
—and they all flew Valsparred planes, of course!

THAT Lindbergh, Chamberlin, Byrd, Maitland and Stinson should all make astounding records in planes finished with Valspar and Nitro-Valspar is not a mere coincidence; it is a verdict. It confirms what every aircraft maker knows, namely, that, when a plane must yield the utmost in dependable

service, the materials used in constructing and finishing it must have demonstrated their ability to withstand the severest flying conditions.



Valentine's Valspar finishes have done exactly that since the earliest days of aviation and continue to do so on a large majority of the high-grade airplanes built today.



P. & A. Photo

Valspar has traveled the Pacific on countless occasions, but it never made the jump to Honolulu so quickly as on Maitland's Fokker.



When reliability is the word, experienced aircraft builders choose Valspar. Of course it was used on the Stinson-Detroit plane which won the Ford Reliability Tour, Stinson himself piloting.

NITRO-VALSPAR

The all-lacquer system

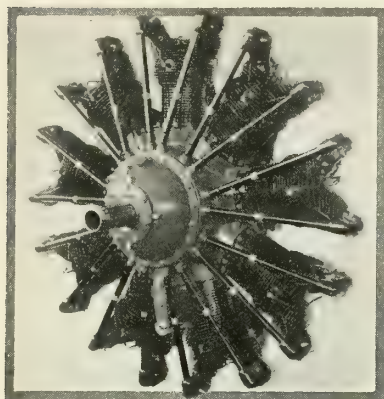
VALENTINE & COMPANY, 456 Fourth Avenue, New York, N. Y.

AMERICAN AIRCOOLED AIRCRAFT ENGINES

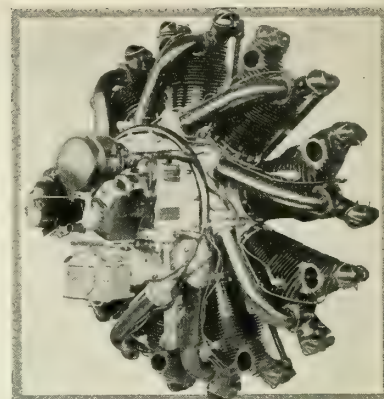
By

Commander E. E. Wilson

U. S. Navy



Pratt and Whitney "Hornet".



Pratt and Whitney "Wasp".

FROM the very beginning of aeronautics, flight in heavier than air craft has been dependent upon the development of an engine. The ancients had sur-

tempt to list the factors in the order of their importance, we may put them down as follows:

1. The power plant must be as light as it is possible to make it.

The weight per horsepower must be low.

2. The engine must get along on the least possible amount of fuel because fuel is an important item of weight. Our economy must be high.

3. The engine, in spite of the hard work to which it is subjected, must run as long as the gasoline lasts. It must be dependable.

4. Our engine must be durable; that is, it must continue to put forth its best work over long periods of service.

5. The engine must be easily maintained. It must be simple to get in to make the tests and adjustments which are so necessary to its functioning.

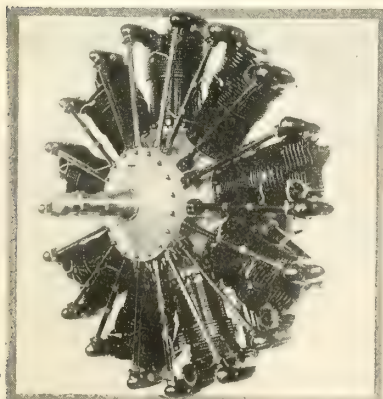
6. The cost of our engine must be low. If aircraft are to come into wide use, their cost must come within the limits of people's pocketbooks.

This last requirement of low cost is the one which is so difficult to reconcile with the five that go before. The necessity for light weight is one that runs up the costs. Now if engines are to be cheap, they must be used in quantities. If they are to be used in quantities, they must be cheap. A very careful analysis shows that the reduction in cost resulting from a complete redesign intended to reduce cost is but a drop in the bucket compared to the reduction which is possible through quantity production.

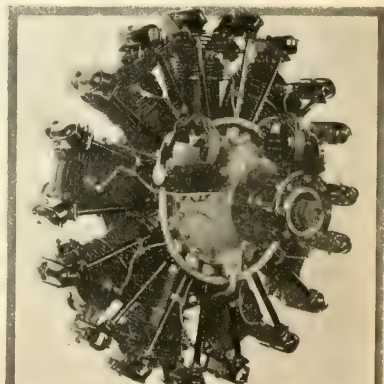
One of the real hopeful results of all these sensational flights is the great increase of public interest in flying. Once this interest takes the practical form of buying engines, costs will come down just as they have come down in the automobile field. At present an order for two hundred engines is a real order. If automobiles were built in lots of two hundred, only the rich could afford to use them.

Now that we have listed the engine requirements, we must look farther and see how nearly we have met them.

(Cont. on p. 358)



Wright "Cyclone".



Wright J5 "Whirlwind".

prisingly wide knowledge of the fundamentals of flight, but they could not apply them because there was no suitable engine. The Wright Brothers succeeded largely because they went out and built their own engines. Mr. Charles M. Manly, who was associated with Langley in his researches, was, in the light of present knowledge, far in advance of his time in his engine design, and was well on the way to success when the work was terminated.

Progress in aeronautics has been largely a matter of progress in power plants. While developments in aircraft have been largely a matter of refinement in design, involving comparatively simple improvements, the advance in aircraft engines has been marked. Between the 400 horsepower Liberty, a marvelous engine in its time, and the 400 horsepower "Wasp", our modern aircooled engine, the weight of the powerplant has been cut in half. The striking transoceanic flights which will make the year 1927 an important one in the history of aeronautics, are to a large degree indicative of powerplant developments. American initiative, American courage, and American skill have ridden to fame behind American aircooled aircraft engines.

There are six fundamental requirements for aircraft powerplants. These requirements are mutually antagonistic, and the final result is a balance. One is reminded here of that famous little book, "The Airplane Speaks", in which all the factors in aircraft performance are given personalities and gather about to emphasize their importance in the matter of airplane design. The fascinating discussion is finally closed when

"Miss Efficiency" flaunts herself out of the room complaining bitterly that she has been "compromised". The modern aircraft engine accepts comparatively few compromises. The six fundamental requirements are met now to a surprising degree.

Without any at-

H. A. Bruno—R. R. Blythe and Associates

Public Relations Counsel

Specializing in Aeronautics

NEW YORK CITY OFFICE Suite 2007 220 WEST 42nd STREET
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MAYBACH-ZEPPELIN AIRSHIP CO., *N. Y. C. and Friedrichshafen, Germany* Airships
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NATIONAL GUARD AIR SERVICE, 27TH DIVISION, NEW YORK. . . Air Meet (1925-26)
NEW YORK AIR RACES (PULITZER), *Mitchel Field, L. I.* Air Meet (1925)
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RYAN AIRLINES, INC., *San Diego, Calif.* Airplanes
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Complete list of clients in other industries,—including automotive, mercantile, motor boating, radio, real estate, transportation and others—furnished upon request.

AVIATION PROGRESS IN THE RECENT TRANSOCEAN FLIGHTS

IN analyzing the results of transatlantic flights

and their effect upon aviation there are different viewpoints from which the problem can be approached. *L'Ala D'Italia*, an Italian aeronautical monthly, presents the following views of Engineer Garuffa, editor of the technical section of that publication, on this subject:

Is the final success worth the sacrifice made and are the efforts crowned by results? The brilliant outcome of the flight made by Lindbergh, Chamberlin and Byrd and the tragic fate of St. Romain, Nungesser, Coli, Davis and other heroes fill our hearts with unreserved admiration, natural for any noble human act yet it is opportune to ask to what degree they are serving the future of aviation. Non-stop transatlantic flying presents different problems, the solution of which means real progress in aviation. These points of importance are: the duration of flight, direction, meteorological conditions, safety and finally, the commercial interest.

DURATION IN A NON-STOP FLIGHT

A non-stop flight of about 3700 miles (Chamberlin's flight was 3923 miles and the *America's* probably longer) would require from 40 to 45 hours at an average speed of about 95 miles per hour. Not considering the danger of the unknown but merely a flight in the vicinity of landing fields, it was technically possible from past experiences to accomplish such flights. For a technician, a choice between the dangers of the Atlantic and the security of flying fields with the element of personal safety, is naturally in favor of the latter. The long duration of flight necessitates carrying an enormous quantity of fuel which results not only in high wing loading and consequent difficulty in taking off but also in making the piloting more difficult in view of the considerable travel of the center of gravity due to the consumption of fuel. Continuous duration of such a flight increases the strain on both materiel and personnel.

Fifty hours constitutes one-third of the normal time which an airplane engine can be run without major overhaul. So the effort required of an engine in such a flight is great and the probability of a failure very likely. Fouled spark plugs may cause cylinders to miss fire and cause vibration which may become dangerous for the engine operating for many hours. The planes which crossed the ocean were not provided with motors accessible in flight; and failure, dangerous even in a multi-motored plane, is catastrophic for a single-motored craft.

The problem of safety in flight cannot be solved with a single-engined plane. A tri-motored plane, if two of the engines are sufficient for level flight, is in a much better condition and the proof of this is in Byrd's flight. As regards the personnel, their endurance depends to a great extent on the type of the plane. In a plane with a cabin where the personnel can rest, find shelter from cold and snow or at least can stretch themselves, conditions are much better. But in planes similar to Nungesser's Levasseur and Lindbergh's Ryan the crew must remain for many hours cramped in a small seat without being able to rest properly, not to speak of other difficulties which tend to diminish the physical endurance of the crew.

DIRECTION OF FLIGHT

In an overland flight it is easy to estimate the drift caused by strong side wind and which cannot be detected by the compass. The numerous points of reference on the

ground can be used in connection with information supplied

by various instruments in order to establish with certainty the trajectory of the plane. Over the sea these reference points are lacking and the resulting danger is increased by the fact that an error in direction may result in a lack of fuel and fatal consequences. The only possible way to follow the route is by the usual methods of naval navigation. The system used in airplanes is, however, rather delicate as regards precision. In any case the system can be only applied when the sun or stars are visible to the navigator.

It is true that under certain conditions navigation over land is also difficult and the experience of the *America* travelling in the dark, foggy night is good proof of that. The problem of importance to be solved is navigation at night or in fog and until its solution the growth of commercial aviation will have its limitations.

METEOROLOGY

Everyone acquainted with aerial navigation knows how rapid are the changes in meteorological conditions even for flights of short distances and how bad weather makes navigation in the air a difficult matter. For short distances, the pilot easily overcomes the difficulty of flying in rain, snow, etc., but he cannot combat these conditions if they should continue for nearly 50 hours. In a normal condition of dense fog a pilot usually makes a landing anywhere until the weather changes, or returns to his point of departure. This could not be done by a pilot on a transatlantic flight if the plane should encounter a gale or meet banks of dense fog; for instance such as Byrd and his crew met in the north of France. Meteorological forecast is indispensable but it is not sufficient for a flight of this duration. It is not logical to blame the unsuccessful outcome of a flight of this type because of the deficiency of meteorological information which has been favorable when the flight was started.

Meteorological knowledge in aviation is simply a certain probability which is less dependable the longer the flight continues and cannot be predicted accurately as to conditions many hours ahead of time. In appreciating the value of possible changes, the experience of the pilot and his ability are of prime importance. This is the natural knowledge gained only after considerable experience in long flights and courage and daring cannot take the place of knowledge. In any case, the errors cannot be blamed on meteorology. Under conditions of this sort we see the present attempts, whether successful or not, are not independent of chance, and may easily be unsuccessful.

It is on account of these conditions that a safe solution of transatlantic flight is possible only with a large seaplane having a powerful radio and having at least three or preferably four motors capable of being repaired in flight. This solution is only partly given in the seaplane of De Pinedo and in Byrd's *America*. At any rate we are rather far from a satisfactory solution of this problem. Many of the present attempts were made without providing all the elementary precautions and were made in planes designed for entirely different purposes.

Of all the planes specially fitted for a long flight only the Levasseur of Nungesser presented a certain probability of being able to float until help arrived and even this precaution proved to be futile. During the first half of the flight with full fuel tanks,

(Continued on page 359)

ANNOUNCING



NATURALINE

A SUPER AVIATION MOTOR FUEL



Modern airplane motors demand a fuel that will meet the demands of modern engineering.

"Naturaline" . . . the new, highly volatile, non-corrosive, anti-detonating aviation fuel . . . is a real achievement of science.

It weighs forty-six pounds per hundred gallons less than U. S. Fighting Grade Aviation gasoline . . . a tremendous factor in itself . . . and its unusual power and the elimination of "gas look" makes it an ideal fuel for the finest aviation motors.

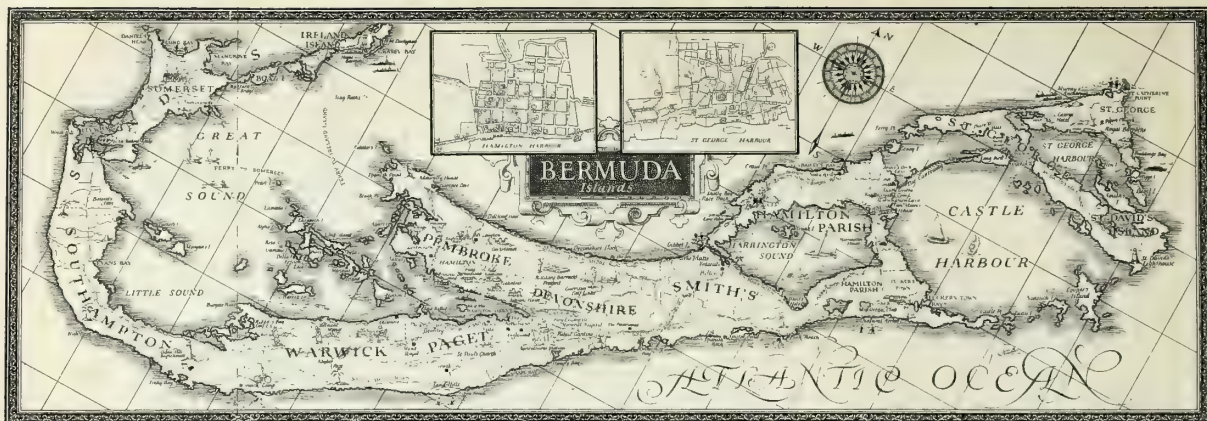
It has undergone exhaustive tests in all types of modern aviation motors for the past eight months and every user is enthusiastic over it. It is a fuel we will be glad to tell you more about.

CHESTNUT & SMITH

C O R P O R A T I O N

Tulsa, Oklahoma

Say you saw it in AERO DIGEST



BERMUDA SAFETY FLIGHT CONTEST

*\$10,000 Prize offered by the Bermuda Government for
Flight between New York and the Bermuda Islands*

THE New York office of the Bermuda Trade Development Board announces that the Bermuda Legislature has appropriated £2,000 or approximately \$10,000 to be known as "The Bermuda Safety Prize."

This prize offered by the Bermuda Government is to be awarded to the aviator who, during the period of three months beginning September 1st, makes the best flight between New York and Bermuda, in either direction. The award is to be given for the highest number of points scored upon a basis of the safety factors employed.

The Bermuda Safety Prize is not to be awarded for speed and it will make no difference in the judging of a contestant flight whether he arrives September, October or November.

It will be seen that one result of the contest will be to hasten the inauguration of regular passenger air service between the American mainland and the Bermuda Islands in mid-ocean.

Aviators flying to and from New York, or anywhere else, who include the New York and Bermuda trip in either direction as a "leg" of their longer flight, can qualify to compete for the Bermuda Safety Prize as far as

their voyage between New York and Bermuda in either direction is concerned.

Frank A. Tichenor of AERO DIGEST has consented to act in an advisory capacity and has selected a committee composed of Clarence Chamberlin, Lieut. George Noville, Dr. Michael Watter, Major George Robertson and Commodore J. G. Ericson to supervise the rules and regulations now being drawn up to govern the contest.

Three independent judges will be selected to act in technical matters and to render decisions, while facilities will also be available in Bermuda for the compiling and checking of data relating to the arrivals and departure of contestants.

The committee will award more points for a flight from New York to Bermuda than from Bermuda to New York because, obviously, it will be more difficult to pick up a group of islands barely twelve miles across at their longest dimension than to find the American mainland and be guided by it into New York.

Copies of the rules and regulations may be obtained at the AERO DIGEST offices, 220 West 42nd Street, New York City.

THE SECOND SPLITTER

(Continued from page 267)

ever timed was at Wilbur Wright Field when Kelly and Macready went up for an endurance test just before their transcontinental flight. They flew round a 50 kilometer triangular course and I kept tab on them till they ran out of gas and had to come down. I was on the job that time 36 hours and five minutes."

By profession Mr. Porter is an electrical engineer who lives and labors in Indianapolis. Among other things he is the official timer of the Indianapolis Speedway and is responsible for the installation of all the myriad electrical equipment with which that mecca of motordom is fitted. His timing machine had its origin in a request by the Indianapolis Speedway officials for an electrical scoring device. Mr. Porter bought a machine, the forerunner of his present timer, and proceeded to tear it down and add improvements to his own notion.

He's been doing that ever since until now the paraphernalia just about suits him. The intricacies of the device

(Odis says it's "simplicity itself") baffled detailed description but in general the timing machinery, with which Mr. Porter turns up wherever there's a speed event worthy of the name, consists of a clock, an electrical motor, batteries for same (lest some sudden failure or fluctuation in local current upset the friendship of nations) a series of wheels with figures on their rims representing hours, minutes, seconds and hundredths of seconds, a paper tape on which these figures print and a hand "trap" which is pressed when the racer, be it plane, boat, car or what-not, passes the timing wires. This trap actuates the timing machine and records the fractional instant at which the racer passed. Whatever "human lag" there is remains the same for each lap and so does not affect the final results. For auto races a road trap, tripped by the car itself, makes matters easier for Odis. "Fifty seconds after the last lap is run the results of the race are ready to go on the wires," Mr. Porter says proudly. "That is, of course, if the calculating machines are on the job and they usually are."

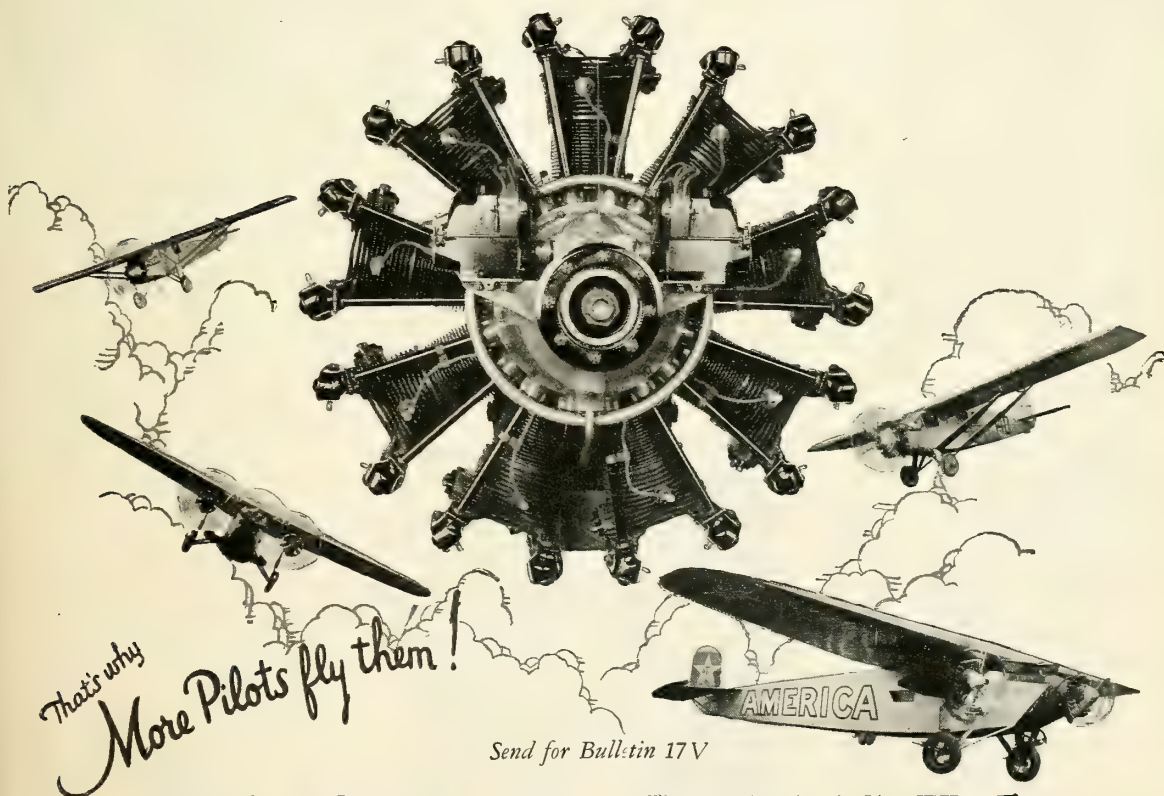
Small wonder Odis A. Porter never has had time to see a race.

CONFIDENCE!

Lindbergh, Chamberlin, Maitland, Byrd, Smith, Goebel and Jensen placed their confidence in the Wright Whirlwind engine—and astounded the world by their achievements.

Less spectacular, but equally significant, is the selection of this same engine by twelve out of fourteen entries in the Third National Air Tour for the Ford Trophy, in which Wright Whirlwind engines again won first and second places.

Public confidence in modern American aircraft powered with this proven engine is founded on a long record of unflinching service.



WRIGHT

AERONAUTICAL CORPORATION

Paterson, N. J., U. S. A.

"THE DRIFT INDICATOR"

THE development and marketing of night electric advertising from airplanes offers such broad possibilities that Mr. C. G. Peterson has announced his resignation from Wright Aeronautical Corporation in order to devote his time to this project.

The experimental work on this method of an electric flying signboard with Neon lights has been carried on by Roland Rohlfis and G. S. Ireland, with whom Mr. Peterson will be associated, with offices located in New York City.

In the seven years that Mr. Peterson has been with the Wright Company as assistant to the president, he has taken a very active part in the development of commercial aeronautics in the United States.

THE agitation for a New York airport is greater now than it ever has been before. A year ago it was hard to find one place suitable for a New York airport, now there seem to be seven or eight.

Reynolds Airways has bought Curtiss Field, which is good news, for the real estate men have been threatening to break it up into building lots for the last few months. It will be improved with new buildings and a great deal of work will be done on leveling off the field.

The Eaglerock Airport, New Rochelle, operated by the Atlantic Airways is reported to be doing a big business in passenger carrying.

Teterboro Airport and Hadley field have also been running to capacity.

R. J. Gibbons of the Gibbons Company has laid out plans for an airport at the site of old Dreamland, Coney Island, and another one in the Red Hook section of Brooklyn.

Congressman Cohen is actively working on a bill to make Governor's Island a municipal airport.

THE non-stop race from New York to

Seattle to be run in addition to the New York-Seattle Air Derby is creating a great deal of interest among pilots and plane owners. Charlie Collier of sky writing fame and president of the newly formed Aviation Service Corporation, has been asked to take care of the details. All those who want to enter ships in the New York-Seattle non-stop race will get the complete information from Collier at his office at 12 West 40th Street, New York City.

AL BURROW, formerly of the U. S. Air Corps, is now parachute demonstrator for the Thompson Brothers Balloon Company, Aurora, Ill., manufacturers of balloons and parachutes.

A. W. SHAW COMPANY, publishers, announce in their September issue of *The Magazine of Business*, a practical business test of the airplane. This test of commercial aviation is the first endeavor to specifically determine what a typical medium priced practical commercial ship, operated by a typical business in every day activities can do. Their purpose is to de-

Bits of news picked up here and there

By William A. Rogers

velop facts and information that can be made available to other business enterprises and their executives in deciding what aviation offers them in facilitating their work.

The test plane is a Stinson-Detroit cabin monoplane which will be in charge of R. L. Putnam, vice-president of the A. W. Shaw Company, who was an Army flyer during the world war. The use of the test plane will be strictly in the line of duty—no trick flying or publicity stunts will be indulged in. Logs will be kept in which facts which business men will want to know will be recorded—cost of operation, repairs, available landing fields in cities where business is to be done, time gained or lost in transit and so on. In connection with this announcement appears a story by Colonel Paul Henderson the title of which is "The Airplane—A New Tool of Business."

THOMAS COOK AND SON are organizing the first big airplane tour to be operated in America. It will mark the beginning of regular airplane passenger traffic under their direction between the principal cities of the United States. Arrangements have been made for 20 passenger flying planes to carry a special party of air tourists bound from Eastern cities to Chicago to see the Dempsey-Tunney fight on September 21st. The tourists will be served luncheon in the air, will be provided with quarters at one of Chicago's principal hotels, a ringside seat at the fight, and will return on the morning of September 22nd.

H. L. BROWNBAC, distributotr of H. Anzani engines in America, is again on his way to Europe. He cannot meet the demand for engines and while abroad will arrange for much larger quantities for the coming year.



Mr. C. G. Peterson.

PARACHUTES are becoming more and more widely used in the commercial field. Commercial pilots have found some difficulty in getting passengers to wear parachutes. To many it is an admission of possible accident which the uninitiated cannot understand. These same people would not think of going to sea on a ship that was not provided with life-boats and would not think of driving a car without bumpers. It is interesting to note that the Boeing Air Transport, Inc., is equipping all ships with parachutes.

The Russell Parachute Company has done a great deal of work in "selling" the parachute idea to commercial operators.

The Royal Typewriter Company is distributing typewriters from their tri-motored plane by means of parachutes. The ship is on an extended tour throughout the country and has delivered typewriters via parachutes at most of the important airports throughout the Eastern and Southern states and Cuba.

F. M. YOUNG, who served as an aeronautical engineer and pilot in the U. S. Air Corps, has been made president of the newly formed Young Radiator Company, Racine, Wis. Mr. Young was formerly vice-president of the Racine Radiator Company.

JACK TWEED has announced the Second Annual Seaplane Convention which will be held at New Haven, Connecticut, on September 17th and 18th. Last year the convention was a big success. Navy machines are expected to attend from Squantum, Rockaway and Washington. The 118th Observation will fly down from Hartford. There are cash prizes, cups and many other awards to be won by the contestants. Motor boat races will fill in the gaps between the events. Everything is in readiness for the reception of visitors and their planes. There are plenty of buoys and anchors available. The runway is capable to take care of practically any type of plane that will be there. Entry blanks and lists of events can be obtained from Jack Tweed, P. O. Box 919, New Haven, Conn.

A. W. SULLIVAN, formerly advertising manager of the Douglas Company, Santa Monica, California, just dropped in with the news that he has joined the organization of the Guggenheim Fund for the Promotion of Aeronautics.

THE American Express Company has published the first air express tariff schedule. Through contracts with C. A. M. operators, it offers air express service reaching from coast to coast and from Boston to Texas. The lowest charge on the tariff schedule is 25c per quarter pound, between New York and Chicago with a \$1.00 minimum charge for shipments. The highest tariff is 75c per quarter pound, for shipment between Boston and San Francisco, California.



Now you can learn Aviation

And Make Big Money

At home—in your spare time—grasp all the fundamentals. You can do it. You can fit yourself for one of the many real opportunities—in the air and on the ground. Begin at once, under direction of Lieut. Walter Hinton, while the men who know Aviation are comparatively few.

Aviation is the great, new industry of the age. The time to get into it is now, when it is young. Think of the fortunes that men made by starting early in the Automobile business—the Telephone, Railroading, the Moving Pictures and Radio. Men who grounded themselves in the fundamentals of these businesses, in their practical everyday workings and processes, made good earnings and rapid progress as the industries grew.

The recent growth of Aviation is prophetic. It is the kind of expansion that means health, solidity and permanence—it is commercial expansion. Mail, express and passenger lines are in operation; great factories are building planes by hundreds for both pleasure and business use. Every city and town is planning an airport. Over 4000 in operation now—6000 privately owned planes.

The industry is growing so fast that there is a positive hunger for trained men in all its branches. But without training, no man is wanted.

Aviation Institute can give you the necessary knowledge. It is easily acquired in spare time, at home. All you need is a desire to learn. Lieut. Hinton who blazed the air trail across the Atlantic, and his staff of experts will guide your instruction from beginning to end. There are many positions open as mail pilots, commercial flyers, instructors, as well as plenty of well paid



Capt. "Eddie" Rickenbacker, America's Premier "Ace."



Lieut. Walter Hinton
First Trans-Atlantic
Pilot, N.C.4.

—My Dear Walter:—There is no doubt but what you are on the right track, and should make a great success of it, as the ever-increasing demand for knowledge of aeronautics can not help but bring you many students who, I know, will benefit greatly from your vast experience."—E.V. Rickenbacker

jobs as inspectors, riggers and mechanics on the field—to say nothing of any amount of openings in the different factories. But aircraft manufacturers must have trained men. There must be no mistake in the construction of a plane.

On the flying field or at air ports, proper training is essential to the successful operation of aircraft. Mechanics, riggers, inspectors and other specialists must know the fundamentals of aviation to be responsible.

The Aviation Institute Course teaches you everything you need to know, right up to the point of actual flight instruction in the air. All the principal ground work, so absolutely necessary to qualify, is secured in a comparatively short time at home. When you graduate from the Institute, you are ready for your opportunity in Aviation.

If you wish to become a pilot, final flying instructions are given in all parts of the United States in cooperation with the Institute. Five to ten hours with an instructor and you can fly alone.

Even if you are already in aviation, the Institute Course will fit you for a better job, help you to greater progress, make possible much higher earnings. Many pilots are taking the Course to keep themselves abreast this swiftly moving industry.

There are thousands of vital facts about Aviation in our new book. Profusely illustrated, authoritative, right up to date. 32 pages of interesting material that may change your entire career. Send for it now. Don't delay, use coupon.

Get all the facts about the Institute Course and the way it leads to Opportunity. Do it now.

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SPOKANE NATIONAL AIR RACES

THERE will be a non-stop airplane race from New York to Spokane in addition to the New York-Spokane and San Francisco-Spokane air derbies, with \$10,000 for the first prize and \$5,000 for the second. These are in addition to the \$48,250 in prizes offered for winners of the air derbies and air races.

Five entries have practically been assured in this first non-stop race across the United States. Among those who have given assurance of entering are: Wm. A. Mara of the Stinson Aircraft Corporation which won the Ford Reliability Tour with a Stinson-Detroit; Lieut. Goddard, pilot of the "El Encanto", which met with a minor crash in taking off for the Dole flight, but which will be ready for the New York-Spokane race; Earl T. Vance of Missoula, Mont., in his Stinson-Detroit; Bennett Giffin, an entrant in the Dole race, and Arthur Goebel, winner of the flight.

Contestants in the non-stop race will take off from Roosevelt Field between 2 and 4 p. m. on September 21st. Any type of plane and any type of motor can enter, but all planes must conform with the requirements of the Department of Commerce regulations. If in the opinion of contest committee weather conditions are such as to make the start dangerous, the start can be postponed, but no later than September 24th.

On September 19th the B class entrants in the National Air Derby Race from New York to Spokane will leave Roosevelt Field and on September 21st the entrants in the Pacific Coast Air Derby Race will start from Mills Field, San Francisco to Spokane.

Entries in the events will close September 10th. Those who have entered the National Air Derby include:

C. B. McMahan, Miles City, Mont.; J. G. Rankin, Portland, Ore.; Floyd M. Showalter, Fort Wayne, Ind.; Harold Danne, New York, N. Y.; R. H. Hoffman, Moline, Ill.; E. K. Campbell, Moline, Ill.; R. E. Drake, Pittsburgh, Pa.; L. B. Colby, Detroit, Mich.; Mohme Engineering Corporation, New Brunswick, N. J.; Breese Air-

craft Company, San Francisco, Calif.; A. W. Stephenson, Dillon, Mont.; Howard M. Rinehart, Dayton, Ohio; Langar Gormal, New York, N. Y.; James S. Charles, Richmond, Va.; S. T. Kaufman, New Brunswick, N. J.; American Eagle Aircraft Corporation, Kansas City, Mo.; Robert S. Fogg, Concord, N. H.; Don S. Phillips, Portland, Ore.; G. L. Smith, Tacoma, Wash.; Capt. Jack Bruce Gorey, Long Island, N. Y.; B. L. Whelan, Dayton, Ohio; Yackey Aircraft Company, Forest Park, Ill.; Capt. Earl W. Fleet, Hartford, Conn.; Emil H. Burgin, Mineola, L. I., N. Y.; Pitcairn Aviation Company, Philadelphia, Pa.; Thomas Colby, Detroit, Mich.; Edward G. Knapp, Ypsilanti, Mich.; Lloyd O. Yost, Pinehurst, N. Car.; L. Royal, Detroit, Mich.; John Paul Riddle, Cincinnati, Ohio; and N. B. Mamer, Spokane, Wash.

In order that practical commercial flying conditions may be approached as nearly as possible, the list of control stations has been revised. The larger planes, with a seating capacity of two passengers besides their pilots, will cover the distance in seven hops, divided between two days. Spending the night of the first day at St. Paul, the big machines are scheduled to make five-minute calls at Cleveland and Chicago the first day, and at Aberdeen, S. D., Miles City, Mont., and Butte the second day.

Smaller machines, capable of carrying one passenger besides the pilot, will take a more deliberate pace, requiring three days for the journey, and making overnight stops at Chicago and Glendive, Mont. Five-minute stops will be made at Bellefonte, Pa., and Cleveland and Bryan, O. Calls will be made the second day at St. Paul and Fargo and Bismarck, N. D., and the third day at Billings and Missoula, Mont.

In the National Air Races, which will be held at Spokane Municipal Airport, Spokane, Washington, on September 23rd and 24th, the Army will have entries in the three military events.

For the Free-for-All Military Pursuit Race the following officers have been selected: Lieuts. E. C. Batten, Wright

Field, Ohio; H. H. George, Kelly Field, Texas; A. J. Lyon, Wright Field, Ohio, alternate; N. Longfellow, Mitchel Field, N. Y.; Y. A. Pitts, Kelly Field, Tex., and E. Eubank, Wright Field, Ohio, alternate. In addition to these, the Commanding Officer of the First Pursuit Group will detail three officers from Selfridge Field, Mich., for entry in this race. Seven pursuit planes will be entered by the Army in the Free-for-All Race: three P-1Bs, two P-1s, and two PW-9s.

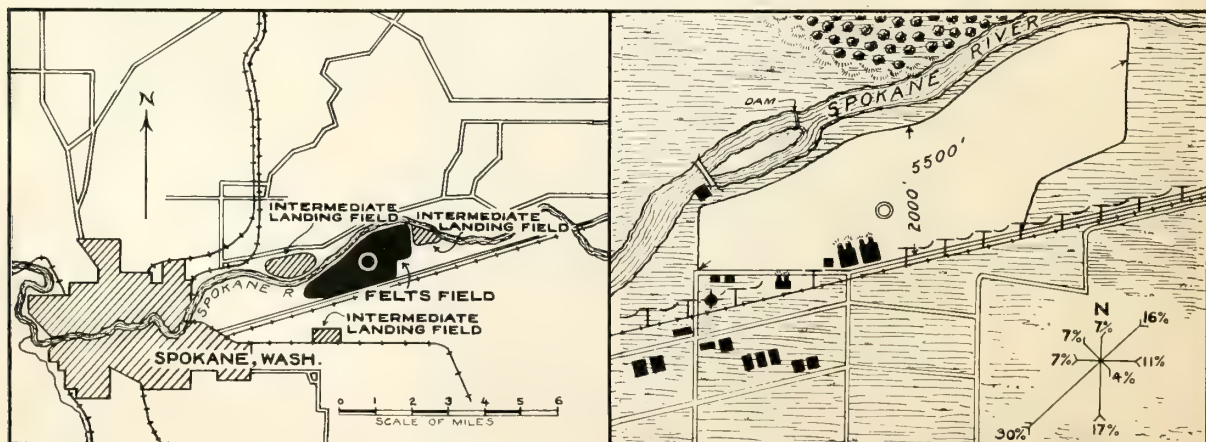
For the Liberty Engine Builders' Trophy, the Army has selected: Lieuts. H. A. Johnson, Wright Field, Ohio; J. T. Kerry, jr., Fort Crockett, Tex.; and R. Boas, jr., Chanute Field, Ill., alternate. In addition to these, the Commanding General of the Ninth Corps Area will designate such pilots as he desires from that Corps Area as entries. The Army will enter two O-1s and the pilots from the Ninth Corps Area will fly O-2 airplanes.

For the Race for Large Capacity Airplanes, the Army has entered: Lieuts. O. Moon, Kelly Field, Tex.; H. W. Beaton, Langley Field, Va.; and H. A. Dinger, Bolling Field, D. C., alternate. In this race two C-2 transport planes are entered, the type used by Maitland and Hegenberger in their Hawaiian flight.

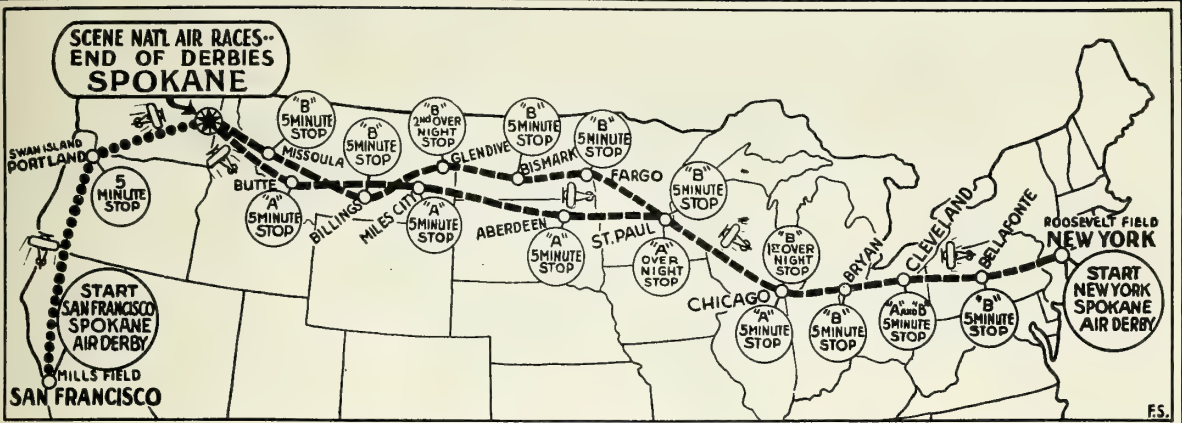
Major H. B. Claggett, Commanding the Ninth Corps Area, has been designated to have charge of all Army planes in the races.

Commercial entries in the National Air Races follow: N. B. Mamer, Spokane, Wash.; Wyoming Airways Corporation, Casper, Wyo.; James Rinehart, Portland, Ore.; G. J. Smith, Tacoma, Wash.; Robert S. Fogg, Concord, N. H.; Aero Corporation of California, Los Angeles, Calif.; S. T. Kaufman, New Brunswick, N. J.; Langar Gormal, New York, N. Y.; Heath Airplane Company, Chicago, Ill.; Wallace Aircraft Company, Chicago, Ill.; Howard M. Rinehart, Dayton, Ohio; A. W. Stephenson, Dillon, Mont.; Irwin Aircraft Company, Sacramento, Calif.; John R. Stiles, Chicago, Ill.; Breese Aircraft Company,

(Continued on page 345)



Spokane municipal airport, the scene of the 1927 National Air Races and the goal of the National Air Derbies.



Sanctioned by the National Aeronautic Association

SEVENTH ANNUAL NATIONAL AIR RACES

SEPTEMBER 23 AND 24

*and National Air
Derby Race
New York to Spokane
SEPTEMBER 19 to 21*

*and Pacific Coast
Air Derby Race
San Francisco to Spokane
SEPTEMBER 21*

"The great importance of this race can be judged by the first prize money, \$10,000"

States PORTER ADAMS

President of the National Aeronautic Association of the United States

—greater than the prize money of any Pulitzer race I can recollect. Private owners and commercial pilots who enter this race stand an excellent chance of winning enough money to almost pay for a new modern airplane."

Send Now for Entry Blanks

See the biggest aviation show ever held in the west. Contests for all types of military and commercial airplanes. Manufacturers will appreciate the exceptional opportunities to secure publicity for their particular type of plane. Thousands of people will greet the flyers enroute.

NON STOP RACE — NEW YORK TO SPOKANE. FIRST PRIZE \$10,000, SECOND \$5,000, TOTAL \$15,000. OPEN TO ALL PLANES CAPABLE OF MAKING THE FLIGHT. CONTESTANTS LEAVE ROOSEVELT FIELD, SEPTEMBER 21.

Complete details for the events can be obtained from Major John T. Fancher, managing director National Air Derby Association of Spokane, 818 Sprague Avenue, Spokane, Washington

\$50,000

**CASH
PRIZES**

and valuable trophies will be awarded winners in these premier aviation classics at the Spokane, Washington, Municipal Air Port.

GORDON BENNETT BALLOON RACE

IN addition to the United States, the nations to be represented at the Gordon Bennett International Balloon Race at Detroit are Belgium, England, France, Germany, Italy, Switzerland and Spain. There are sixteen entries, three each representing America, Germany and France; Italy and Belgium will each have two and the remaining countries one each.

The Gordon Bennett race is the oldest and most prominent event of its kind in the world. It was first held in 1906 and has been an annual event since that time with the exception of the World War period. Four times the trophy has been won by America, the last being the 1926 contest held at Antwerp when Wade T. Van Orman of Akron, Ohio, captured the race and trophy.

The start of the race is scheduled for the afternoon of September 10th from the Ford Airport at Detroit. The first balloon will take off at 4 o'clock and will be followed at five-minute intervals by the remaining 15. The contest goes to the pilot that shall cover the greatest distance before coming to earth again.

America will be represented by Ward T. Van Orman, the winner of the 1926 race, and W. W. Morton, Goodyear pilots of Akron, Ohio; Edward J. Hill and A. G. Schlosser of the Flying Club of Detroit; and Captain W. E. Kepner and Lieutenant W. O. Eareckson of the United States Army.

These three teams finished in the order named in the National Elimination Races in Akron, Ohio, on May 30th, 1927.

A new 80,000 cubic foot racing balloon, replacing the famous "Goodyear III," winner of the 1924 and 1925 National Races and the 1926 International, will be used by Ward T. Van Orman and W. W. Morton. The "Goodyear VI," as the newly-completed racing bag has been named, will incorporate all the improvements in the art of balloon construction learned by the Goodyear aeronautical organization in more than 15 years experience. Of single-ply construction, it will probably be the lightest balloon ever to represent America in an International event. Van Orman and Morton, winners of the 1927 National Race from Akron, Ohio, May 30th, will again use the radio compass and the mariners' sextant as navigation de-



The Gordon Bennett Balloon Trophy.

vices. They maintain that the run to first place in the last National Race was largely possible through the use of these means of position finding.

The Aero Club of France, headquarters of the F. A. I., is sending to Detroit its two principal aeronauts, Messrs. Georges Blanchet and Maurice Bienaimé.

Georges Blanchet is the oldest aeronaut in France and has to his credit more than 400 ascensions, most of them night trips. He is also a heavier-than-air pilot of note. He won the Grand-Prix of the Aero Club of France 1908, 1909, 1910 and 1922. In 1922, in an international race organized in Switzerland, he crossed the Alps from Geneva to Vinovo-Turin.

In April of this year, at the Alfred Leblanc Race, he ranked first. In a small balloon of 600 cubic meters he started from

Paris, landing in Spain at Villanova-de-Meya, province of Lerida, having crossed the Pyrenees Mountains at their highest part (Maladetta)—the first time that a balloon starting from Paris has crossed these high mountains. The flight covered 800 kilometers in 23 hours.

Maurice Bienaimé is the only Frenchman holding both civil and military licenses for piloting and navigating free balloons, dirigibles, and airplanes. He has broken the following records: In 1913 he made a trip of 48 hours from Paris to the Black Sea, 2020 km., which was the French duration record. In 1912, he rose to the altitude of 30,600 feet, which is still the French altitude record. The same year he won the Gordon Bennett race in Stuttgart, Germany, by breaking the world's distance record, 2200 km., in 46 hours. This record is still the longest distance recorded in the Gordon Bennett race. He served in the Aviation Service during the war, was in command of two navy dirigible balloons in the latter part of the war and was in the first of the only two recorded fights between a dirigible and a submarine. He is a member of the Board of Directors of the French Aero Club, also a broker at the Paris Stock Exchange.

The five members of the Italian Army and Navy team which will compete for the trophy in two Italian balloons are: Lieut. Col. Domenico L. Leone and Lieut. Col. Hugo Madori, pilot and aide of the "Dux"; Major Erardo Ilari and Captain Giuseppe Paonessa, of the "Rex." The reserve pilots are Lieut. Gelato and Lieut. Col. Beghi.

Lieut. Col. Leone and Lieut. Col. Madori placed third and fourth in the Gordon Bennett race at Birmingham, Alabama, in 1922.

Lieut. Col. Leone, first pilot of the "Dux", was with the balloon service in the Italian-Turkish war. In 1915 he was made a commander of the Aerostatical Section of Campagna and in 1917 was placed in first command of dirigibles of large displacement. During the World War he took part in many bombardments, service patrols and submarine scouting with dirigibles. For four years he was aeronautical instructor of spherical dirigibles and kite balloons in the Naval Aeronautical School of Barcelona, Spain, and he holds the Generale Moris 1926 cup and Verona 1927 cup for spherical balloon races.

Lieut. Col. Cavalier Hugo Medori, second pilot of the "Dux", was commander of the Observation section during the war and afterwards of the group of the 3rd Army. At present he is commander of the balloon battalion in the Royal Italian Army and has taken part in numerous balloon races.

Lieut. Col. Beghi, reserve pilot of "Dux," is an observer in the engineers, Balloon Observers Service. He took part in the Italian-Turkish and Italian-Austrian wars as observer; and is commander of balloon observers.

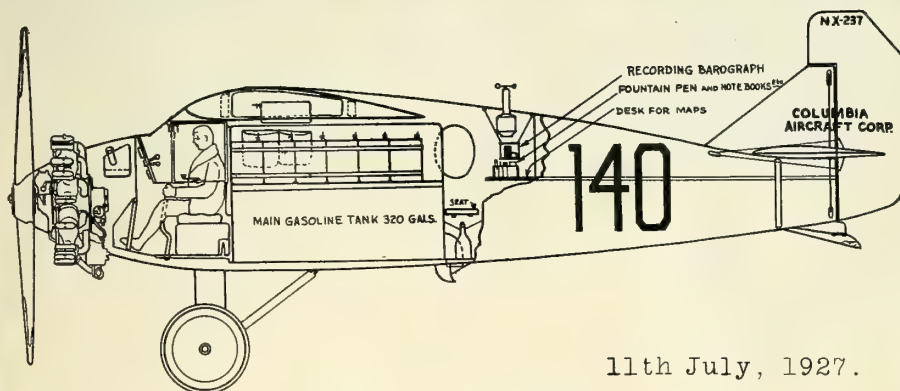
The pilots for Germany are Fritz Eimermacher, in private life an oil merchant of Muenster; Dr. R. Halben, an eye specialist

(Continued on page 342)



Hon. Henry S. Hulbert, chairman of the 1927 Gordon Bennett Race Committee; Wade T. Van Orman, winner of the 1926 trophy; and Ray Cooper, manager of the 1927 Gordon Bennett race from Ford Airport at Detroit, September 10th.

"Most Reliable says Chamberlin"



11th July, 1927.

Dear Mr. Waterman,

Realizing your great interest in aviation in America, I thought you would be glad to know that I carried my old standby - one of your Waterman Pens - on my recent flight from New York to Europe.

As a boy I was accustomed to sell Waterman Pens in my father's store at Denison, Iowa, and have proved from long experience that the Waterman Pen is the most reliable of all Fountain Pens.

Yours sincerely,

Clarence D. Chamberlin

The satisfaction that only a reliable pen can give comes with every

Waterman's

TECHNICAL

THE SIKORSKY TYPE S-36-B TWIN ENGINED AMPHIBIAN

By
Igor I. Sikorsky



A. Black.

IN the past several years practically no flying boats or seaplanes of a new design suitable for commercial work were built in this country. Some very fine modern float jobs and amphibians were designed and built but these types had mainly in view military duty and therefore were not entirely adaptable for commercial work. However, it seems that the commercial market is in great need of a good flying boat or amphibian, especially in the east of the United States where the landing facilities on land are rather scarce and where many important cities are located near or on a lake, river or seashore. The waterways of the country also offer emergency landing facilities and the possibility to use them when flying across country naturally increases the safety of flying.

Our Engineering Department has designed an amphibian plane, one of the features of the design being that the amphibian landing gear can be easily dismantled and the plane used as a straight flying boat if desired.

We designed this plane around two Wright Whirlwind engines and incorporated in this

design the ability of all our twin engine planes to fly with normal load, on one engine only. The general design of this plane is characterized by a very rigid and seaworthy boat and an entirely separate light fuselage-outrigger connected at the center of the upper wing and supported by two struts mounted on the end of the boat and also braced by two cables running from the end of this outrigger to the base of the engine mountings. The tail surfaces are mounted to the end of this outrigger and are entirely independent of the boat and being placed high are well protected from damage on landings or take-offs even in rough weather. This position of the tail surfaces is also advantageous in flight as they are situated well in line of the propeller thrust. The rudders are very efficient and practically no effort is needed to fly the plane on one motor.

The lower wing is of a rudimentary character and is used mainly for structural purposes. The side floats are attached to the lower wing and are closer to the center line of the plane than in the conventional design

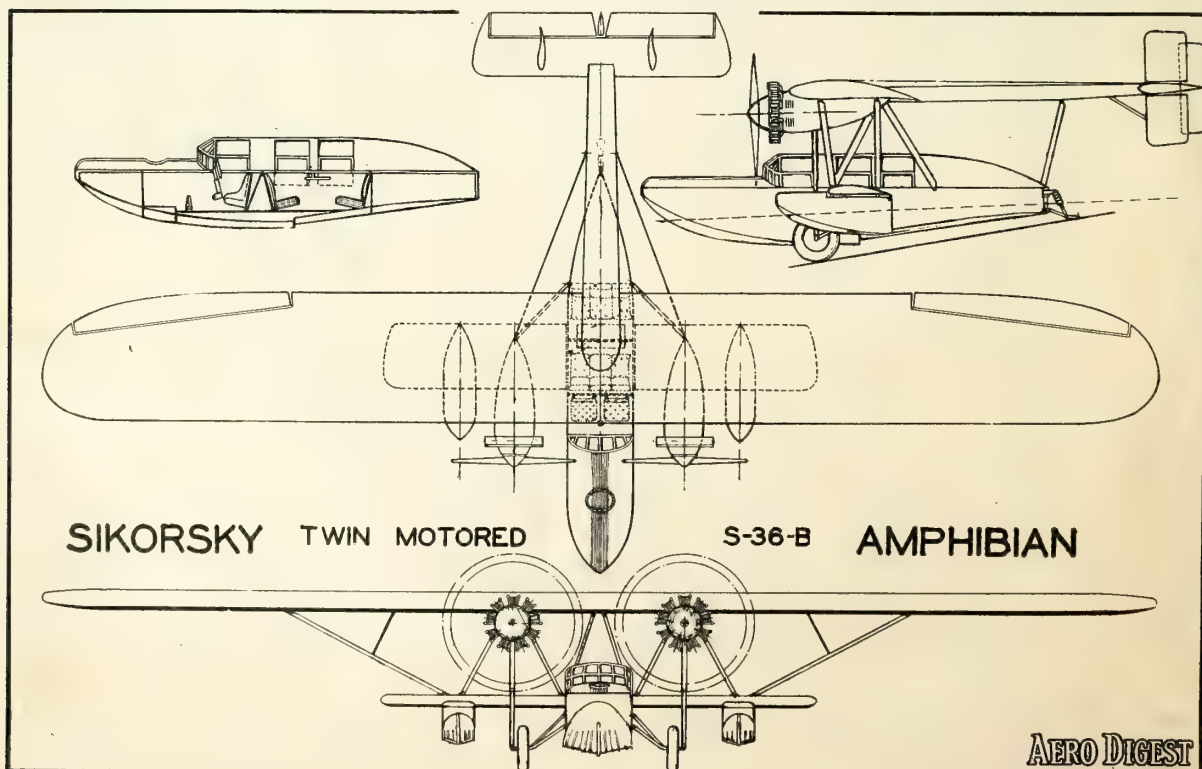
of flying boats. Motors are placed below the upper wing on both sides of the center line.

The wings are of medium thick sections, the airfoil being developed by our corporation after a number of tests of models and actually built airplanes.

The spars are built of duralumin "I" beams and ribs as structural work out of duralumin channels. Spars and ribs are assembled with duralumin rivets and chrome nickel bolts and no welding is used whatsoever. The wing structure is covered with fabric.

The hull is a boat 26 feet long, 51 inches wide and accommodates eight persons in one roomy cabin or three open cockpits. The hull has a V-shaped bottom with one step and consists of several water-tight sections and is built of duralumin sheets mounted on a hardwood frame.

The pilot's cockpit with two seats side-by-side is located in the front of the boat and is equipped with a control wheel mounted on a single column located in the center of the cockpit. The wheel, by means of a pivot,



can be switched from one side to the other so either pilot can control the plane.

In the very front of the hull an opening is provided through which the pilot can drop the anchor or effect the mooring when the ship is afloat. The compartment in front of the pilot's cockpit can also be used for baggage, freight or mail.

In the closed type, the pilot and passengers being located in the same cabin, have direct communication. The cabin has an efficient system of ventilation and is electrically lighted.

The control surfaces are efficient and rigid, the ailerons being of mitered type and sensitive under all conditions. The stabilizer is adjustable in the air. The tail surfaces as well as the outrigger are built entirely of duralumin sections, fabric covered. The power plants located below the upper wing are quickly dismountable for overhauling or replacement. Engines are equipped with hand inertia starters or electrical starters if desired.

Four gasoline tanks are located in the upper wing and therefore the fuel system is of the direct gravity type.

The amphibian landing gear is operated by a hydraulic device which at the same time is a very efficient hydraulic shock absorber. This landing gear is easily attached or dismounted by means of several bolts.

This plane is designed in two types, the service type and the long distance type. General data and estimated performances of these planes are as follows:

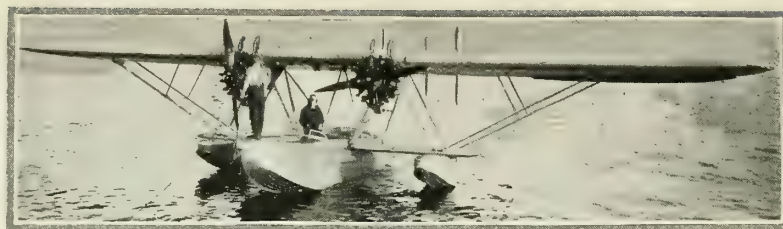
SERVICE TYPE

Span	62 feet
Length overall	34 feet
Height on wheels	12 feet
Wing area	585 square feet
Weight empty	3950 pounds
Disposable load	2000 pounds
Water displacement of boat.....	17,670 pounds
Displacement of side floats.....	2,800 pounds
Power (2 Wright Whirlwind J5).....	200 h.p.
Load per sq. ft.	10.25 pounds
Load per h.p.	13 pounds

Load factors:	High incidence	5.2
	Low incidence	3.6
	Inverted flight	2.0
	Nose dive	2.0

Distribution of Load

As a passenger carrier
One pilot and 7 passengers.....1360 pounds



Lieut. George Pond made the test flights of the Sikorsky flying boat.

Gas and oil for 4 hours.....	600 pounds
Baggage and extras	40 pounds
<hr/>	
Total normal useful load	2000 pounds
Weight empty	3940 pounds
Extra	60 pounds

Gross weight6000 pounds

With normal useful load of 2000 pounds the plane will fly without losing altitude on one out of the two motors. The plane has a considerable overload capacity.

Performances with Normal Useful Load

High speed on two motors.....	120 m.p.h.
Cruising speed	100 m.p.h.
Stalling speed	49 m.p.h.
Speed on one motor	84 m.p.h.
Climb at ground (two motors)....	600 ft.p.m.
Ceiling	15,000 feet
Gliding angle.....	one to ten

LONG DISTANCE TYPE

Span	72 feet
Length overall	34 feet
Height on wheels	12 feet
Wing area	668 square feet
Weight empty	4400 pounds
Disposable load	3000 pounds
Power..... 2 Wright J5 200 h.p. motors	
Total water displacement of boat	17,670 pounds

Wing tip floats	2800 pounds
Load per h.p.	16.1 pounds
Load per sq. ft.	11.1 pounds

Estimated Performances on Two Engines With Normal Load of 3000 Pounds

High speed	118 miles per hour
Cruising speed	100 miles per hour
Stalling speed	52 miles per hour
Climb.....	400 feet per minute
Ceiling	14,000 feet
Horizontal flight on one engine will be possible with a load of 2500 pounds.	

The long distance type of amphibian can be loaded with safety up to a gross weight of 8500 pounds. The load factors given below as well as the stress analysis were made for total gross weight of 8500 pounds.

Load factors:	High incidence.....	4.8
	Low incidence	3.3
	Inverted flight	1.8
	Nose dive	1.8

Estimated Performances on Two Engines With Normal Load of 8500 Pounds

Cruising speed	96 to 100 miles per hour
Climb	400 feet per minute
Ceiling	11,000 feet
Load per sq. ft.....	12.75 pounds
Load per h.p.....	16.5 pounds

With 1500 pounds of crew and equipment the plane will have a range of 1800 to 2000 miles.

The first plane of this type was recently delivered to the Andian National Corporation, Ltd., a Canadian concern operating an oil pipe line in Colombia, South America.

The Andian National Corporation, Ltd., use their planes mainly for inspection of their pipe lines which run along the Magdalena River and as no landing fields are available in this territory they did not require the amphibian landing gear and ordered a straight flying boat.

Many test flights were made on Long Island Sound and the performances of the boat proved to be well in accord with our estimates. The controllability and maneuverability on water and in the air was excellent. The take-off was very fine and the plane could be easily controlled when flying on one motor only. It was a great satisfaction to note the utmost rigidity of the plane structure including the tail surfaces and the absence of vibration while flying at different speed or while taxiing on water.



Ready for its trial flights. The twin-motored Sikorsky Type S-36-B flying boat at the factory, College Point, L. I.



Acme.

LIEUT. WILLIAMS' RACING SEAPLANE

By
George F. McLaughlin

POWERED with the new X type Packard water-cooled 24-cylinder engine, the racing seaplane built for Lieutenant Alford Williams, U. S. N., by the Kirkham Products Corporation was designed primarily to bring the speed record back to the United States. Designed under Lieutenant Williams' personal supervision this little racer incorporates features which make it a worthy contender for the 'world's highest speed honors.

The fuselage is of laminated spruce monocoque construction with wings and float struts faired into it and with a built-in fin. The divided stabilizer has an over-all span of 8 feet and it is located in line with the center of thrust of the propeller. It is braced to the upper and lower fin surfaces with streamline wires.

The power plant, with its odd shape and inverted cylinders, presented a difficult problem in installation and bracing. The cowling is arranged for complete accessibility and the symmetrical streamline of the nose is accomplished in a neat manner.

For the engine cooling system, the water is run through surface radiators built on as a covering for the wings. The oil is also cooled in a wing surface radiator extending for three feet on the lower right wing. The radiator system is composed of a distributor along the leading edge and a series of brass tubes of hollow T section running parallel to the wing curve through which the water is led to a collector at the trailing edge which in turn leads to the engine pump. 690 square feet of water and oil cooling is provided due to the section of tube employed and the fact that there are cooling areas above and below both wing surfaces. 12,000 feet of brass radiator tubes are employed in the wing radiators and the engine circulates the water through them at the rate of 120 gallons a minute. The walls of the radiator T section have a thickness of .0055 inch.

A standard steel adjustable pitch duralumin propeller is driven directly from the engine crankshaft.

Ailerons on both upper and lower wings are operated by means of torque tubes and pull and push rods. Cables are used for operating the elevators and rudders, the lat-

ter by means of foot pedals. There are no control cables visible on the outside of the ship, all operating horns being arranged inside the body.

Wing struts are built up with spruce and duralumin, covered with plywood. The struts to the floats are of steel tube, the upright and diagonal struts of chrome molybdenum and the spacer struts between the floats of 2330 steel which contains $3\frac{1}{2}$ per cent nickel. Anchor fittings are of 3135 steel.

The plywood floats are of the conventional concave V bottom single-step type, the step located about 10 feet 6 inches aft of the nose. Besides the steel tube float brace struts, streamlined with sheet duralumin fairing, streamline tie rods are used in transverse rigging system of the wings and between the floats and the under sides of the wings for lift and drift stresses.

The finish of the plane is in two tones—floats and flag blue. The body, floats, struts, fin and stabilizer are blue while the

wings, elevators and rudder are in gold. The wing radiators, of brass, blend in tone with the remaining portions of the wing and aileron surfaces.

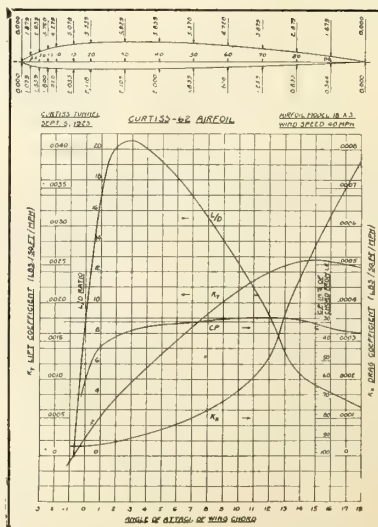
The following instruments are installed: oil pressure gage; oil temperature indicator; water temperature indicator; air speed indicator which indicates up to 350 miles an hour; altimeter indicating to 5,000 feet; and a tachometer arranged to indicate engine speeds up to 3,000 revolutions per minute.

Specifications

Span, upper wing.....	29 feet 10 inches
Span, lower wing.....	24 feet 3 inches
Length over all (at body).....	22 feet 9 inches
Length over all (including floats).....	26 feet 9 inches
Height over all	10 feet 9 inches
Chord, upper wing .....	.65 inches
Chord, lower wing .....	.44 inches
Gap between wings	41.5 inches
Stagger	10 $\frac{5}{8}$ inches
Area, upper wing	142 square feet
Area, lower wing	75 square feet
Aileron area, upper (each).....	5 square feet
Aileron area, lower (each).....	3 square feet
Fin area	8 square feet
Rudder area	7 square feet
Stabilizer area	16 square feet
Elevator area	10.2 square feet
Cooling water capacity.....	.35 gallons
Fuel capacity .....	.60 gallons
Oil capacity .....	.15 gallons
Length of floats	21 feet 3 inches
Beam of floats	40 inches
Tread of floats.....	8 feet
Weight of each float.....	280 pounds
Propeller diameter	8 feet 6 inches
Engine, Packard X type.....	1,250 horsepower
Weight of engine (dry).....	1,400 pounds
Weight of engine in lbs. per h.p.....	1.12 pounds
Rate of fuel consumption.....	.53 pounds per h.p. hour

Weight of complete plane, light.....4,000 lbs.
Weight of plane fully loaded.....4,600 lbs.

The X type Packard engine is a new development whereby two of the 12-cylinder type V 1500 engines, one inverted and one upright, are joined to a common crankshaft. This results in an X arrangement of the 24 cylinders. The bore is 5.375 inches and the stroke 5 inches; cubic displacement 2,775 inches. At 2,700 revolutions per minute the



Characteristics of the Curtiss C-62 airfoil used on Lt. Williams' seaplane.

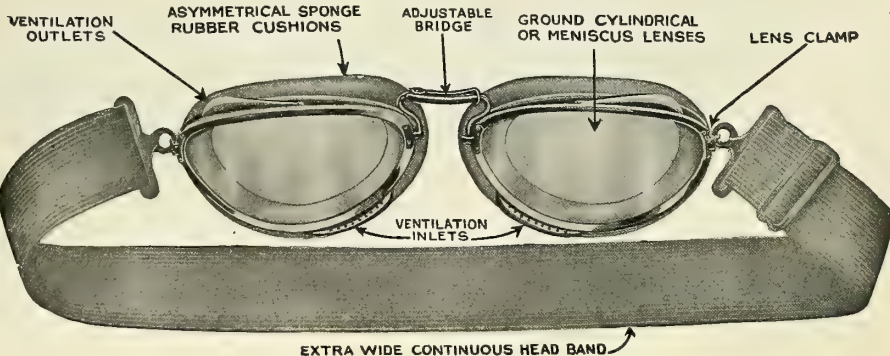
MEYROWITZ LUXOR GOGGLES

Exclusive features make them different. Made with optical precision — you are assured of vision first. Improved design provides perfect fit and unusual comfort.

MEYROWITZ LUXOR GOGGLES No. 6

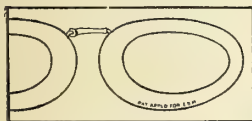
U. S. Air Service Model

With ground polished and cylindrical bent white lenses	\$10.75
With ground polished and cylindrical bent Amber or Euphos (green) tinted lenses	12.75
With hand ground Meniscus white lenses	15.00
With hand ground Meniscus Amber or Euphos (green) tinted lenses	16.50
per pair	
Ground, polished and cylindrical bent white lenses	4.00
Ground, polished and cylindrical bent Amber or Euphos (green) tinted lenses	5.00
Hand ground Meniscus white lenses	8.00
Hand ground Meniscus Amber or Euphos (green) tinted lenses	9.50
Continuous head band, 1 1/4" wide, each	1.50
Sponge rubber cushions, per pair	2.50



MEYROWITZ LUXOR GOGGLES No. 6—U. S. Air Service Model

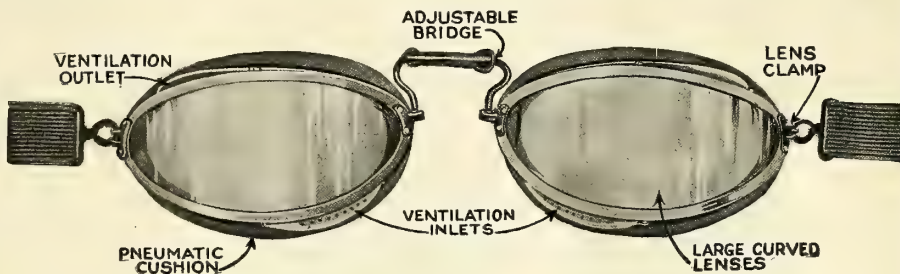
This model has been used on practically every important air expedition. The accepted goggles of the air fraternity.



The small cut shows the asymmetrical shape of the Meyrowitz Patented Sponge Rubber Cushion. These cushions prevent air seepage.

LUXOR GOGGLES No. 6

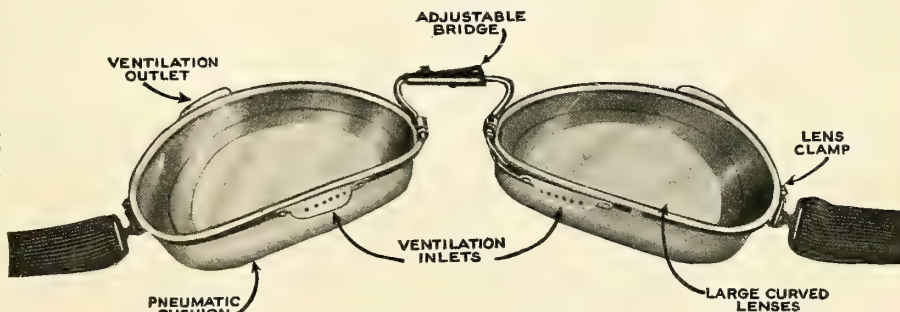
Luxor Goggles No. 6 with first quality white lenses	\$9.75
Luxor Goggles No. 6 with first quality tinted Amber or Euphos (green)	10.50
Luxor Goggles No. 6 with hand ground Meniscus white lenses	15.00
Luxor Goggles No. 6 with hand ground Meniscus tinted Amber or Euphos (green)	16.50
per pair	
White lenses	\$1.50
Tinted Amber or Euphos (green) lenses	2.00
Pneumatic Cushions	2.00
Two-piece Head Band	1.00



LUXOR GOGGLES No. 6—Regular Model

LUXOR GOGGLES No. 5

Luxor Goggles No. 5 with first quality white lenses	\$6.75
Luxor Goggles No. 5 with first quality tinted Amber or Euphos (green)	7.50
per pair	
White lenses	1.50
Amber tinted or Euphos (green) lenses	2.00
Pneumatic Cushions	2.00
Two-piece Head Band	1.00



LUXOR GOGGLES No. 5

Insist on Genuine LUXOR Goggles. Send for free circular.

Worn by all leading aviators: Commander Byrd, Col. Lindbergh, Clarence Chamberlin, Lieuts. Maitland, Hegenberger, Noville, Hinton and many others.

E. B. Meyrowitz
INCORPORATED

Established 1875

520 Fifth Avenue at 43rd Street, New York

Contractors to the U. S. Government

Paris
London
Detroit
St. Paul
Minneapolis



rated output is 1,250 horsepower.

In order to save weight, no self-starter is provided in the plane. For starting the engine before the plane is put afloat, a portable auxiliary cranking device is used. This consists of an electric motor run with storage batteries and supported on a tripod. Connection is made between the electric motor and a dog projecting forward of the propeller hub; disconnection is made automatically when the engine starts.

As we go to press, tests are being quietly conducted at Port Washington, L. I., where the plane is housed at the hangar of Caleb Bragg. Unofficial reports indicate that a speed of over 275 miles an hour has been made over a carefully checked course and it is probable that Lieutenant Williams will attempt a new world's record before the Schneider race. Arrangement is made to equip the plane with landing wheels to replace the twin floats and it is probable that

Lieutenant Williams will attempt to establish a new speed record for land planes with the same machine.

PORTABLE ELECTRIC HAMMER

THE accompanying sectional view shows the internal mechanism of the Black & Decker electric hammer. The motor in this hammer is the same type as used in the Black & Decker portable electric drills with the exception of a few minor refinements, making it more applicable for this type of work. It is a universal motor operating on direct current or alternating current from 25 to 60 cycles and operates efficiently on voltages 10 per cent above or below voltage shown on the name plate.

The armature of this motor turns at approximately 10,500 r.p.m. and is equipped

with an aluminum centrifugal fan which draws air in at the commutator end of the motor, passes it around the motor, and expels it through several ventilating holes in the field case opposite the fan.

The armature shaft is hollow to accommodate the spline shaft upon which the reciprocating hammer mechanism is mounted. This reciprocating mechanism, which actually strikes the blow, is made



up of a special drop forging upon which are mounted the two beveled gears heavily weighted on one-half of their area. These gears are driven by a beveled pinion of the spline shaft, and, consequently, they rotate in opposite directions; the two weights being together each half of complete revolution. When the two weights are together at the bottom, the whole reciprocating mechanism mounted on the spline shaft moves downward, striking a heavy blow on the oil-tight piston which transmits the blow to the drill or cutting tool being used.

The piston in the nose of the hammer which receives the blow from the ram on the reciprocating mechanism is a "suck-fit" which prevents any oil from passing. This piston is supported by a heavy coil spring which absorbs the hammer blow when it is running idle. It strikes 2,300 blows per minute.

PRELIMINARY FLIGHT TESTS OF THE N. A. C. A. ROOTS TYPE AIRCRAFT ENGINE SUPERCHARGER

By ARTHUR W. GARDINER AND ELLIOTT G. REID

Synopsis of N. A. C. A. Report No. 263

AN investigation of the suitability of the N. A. C. A. Roots type aircraft engine supercharger to flight-operating conditions, as determined by the effects of the use of the supercharger upon engine operation and airplane performance, is described in this report.

The supercharger has been previously described in N. A. C. A. Technical Report No. 230; the results of laboratory tests are also given there. The compressor has a displacement of 0.51 cubic foot per revolution and weighs 88 pounds.

The selection of a suitable propeller and the provision of satisfactory intake ducts and adequate engine cooling were preliminary problems. The supercharger was first tested in a modified DH-4 airplane with a 5.4 compression ratio Liberty-12 engine. Two sets of drive gears which enabled the maintenance of sea-level pressure at the carburetor intake up to 12,000 and 20,000 feet were provided. The higher gear ratio supercharger was next tested in a DT-2 landplane which was later converted to a twin-float seaplane; the DT-2 also had a Liberty engine. Loads up to 2,000 pounds were carried in the seaplane with normal and supercharged engines.

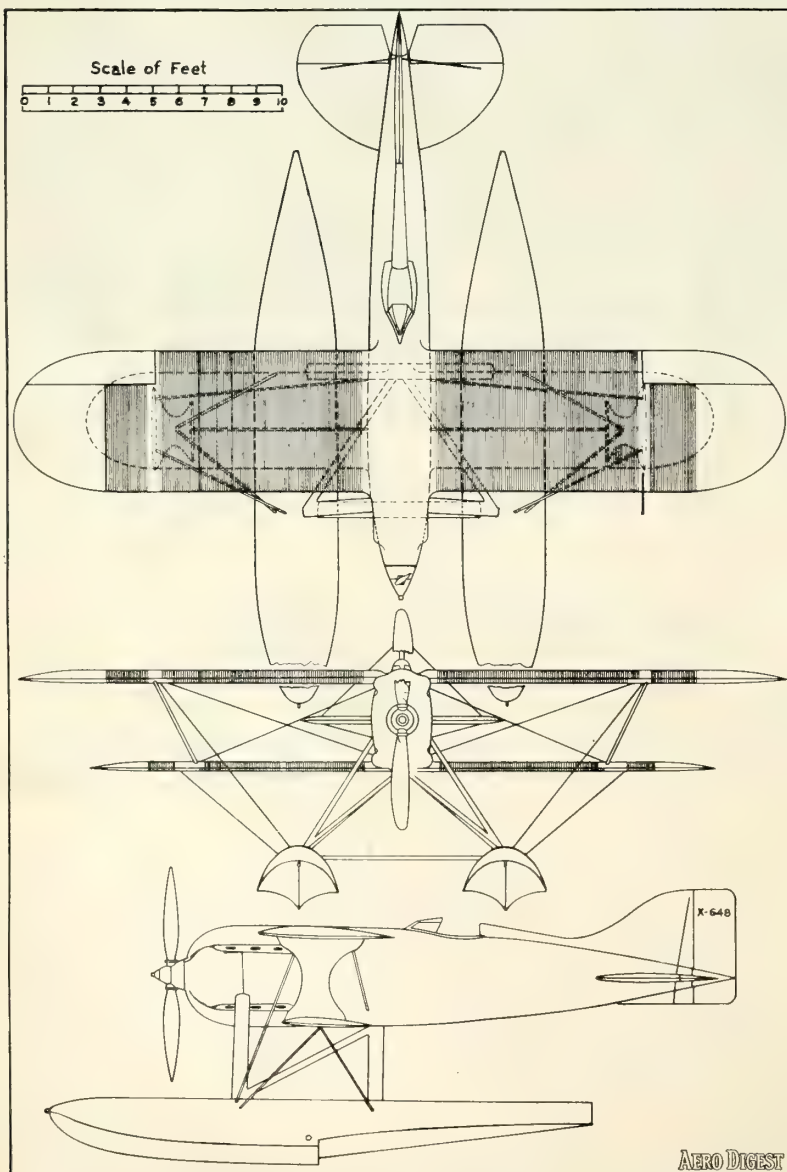
Attention was concentrated on the operation of the engine-supercharger unit and on the improvement of climbing ability; some information concerning high speeds at altitude was obtained.

The supercharger was found to be satisfactory under flight-operating conditions. Although two failures occurred during the tests, the causes of both were minor and have been eliminated. Careful examination of the engines revealed no detrimental effects which could be attributed to supercharging.

Marked improvements in climbing ability and high speeds at altitude were effected. It was also found that the load which could be carried to a given moderate or high altitude in a fixed time was considerably augmented. A slight sacrifice of low-altitude performance was necessitated, however, by the use of a fixed pitch propeller.

From a consideration of the very satisfactory flight performance of the Roots supercharger and of its inherent advantages, it is concluded that this type is particularly attractive for use in certain classes of commercial airplanes and in a number of military types.

Report No. 263 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.



3-view outline scale drawing of Lieut. Williams' 1250 h.p. racing seaplane.



Over land or over sea HASKELITE is First

IN flights over land or over sea, planes built with HASKELITE plywood are first. The use of HASKELITE in the winner and nine of the ten planes to complete the Ford Reliability Tour and in all four of the planes in the Dole race to Hawaii is added evidence of this. Added — because the list already includes such record-breaking planes as Lindbergh's, Maitland's, Byrd's, the Douglas World Cruisers, the NC-4 trans-Atlantic flying boats, and countless others.

The Stinson-Detroiter monoplane which finished far ahead in the Reliability Tour had rib construction, false ribs, under-finish, and cabin flooring of HASKELITE. Uses in the other planes completing the tour also include turtle decks, aileron beams and covering, leading edges, instrument boards, seats, etc.

HASKELITE in these planes is not chance. This plywood is chosen by careful builders whose planes get there first — chosen because it is stronger than steel, weight for weight; because it is the lightest structural material obtainable; because it is weatherproof and absolutely dependable.

Write us for any information you wish

Haskelite Manufacturing Corporation
133 West Washington Street, Chicago

THE MARK VI BRISTOL JUPITER ENGINE

THE Mark VI. Jupiter engine is of the static radial air-cooled type and represents the latest aero engine practice of the Bristol Aeroplane Co., Ltd., England. Though very robust of construction it is compact and convenient for installation, the grouping on the rear cover of the auxiliary drives and accessories, such as the magnetos, carburetor, controls, oil pump, oil filters, gas distributor, gun gear and tachometer drive, ensuring the necessary protection for these components, and allowing of the use of a simple form of cowling, with a detachable rear panel, which gives ready access to all components likely to require routine attention in service.

Three standard types of the engine are produced:—

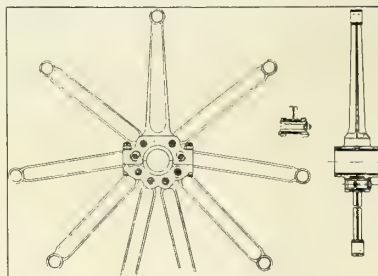
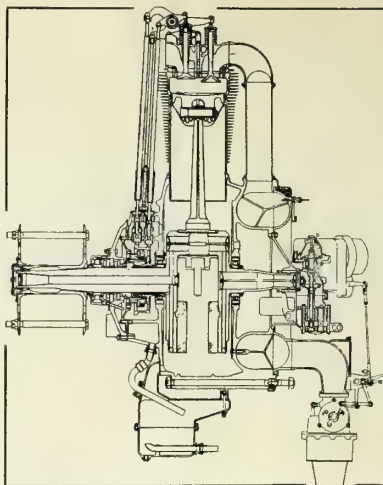
High compression service engine 6.3 to 1 compression ratio. This engine is especially suitable for machines normally operating at altitudes of 15,000 feet upwards. In order to allow of standard service fuel being used without detonation occurring, the machine throttle control is of the gate type, full throttle only being used at altitudes above 5,000 feet. At altitudes above this the engine will show a considerable gain in power and fuel economy over the normal service engine, giving the machine a proportionately higher ceiling.

Standard service engine 5.3 to 1 compression ratio. Suitable for machines normally operating at medium altitudes and requiring the maximum power available at ground level when using standard fuel.

Standard commercial engine 5 to 1 compression ratio. Suitable for commercial machines, the lower rating ensuring a longer life between overhauls, and satisfactory running under a wide range of conditions and fuels.

The two main portions of the crankcase (the front and rear half), are of stout, well-ribbed section and machined from duralumin stampings, a face joint being made on the center line of cylinders by nine collar bolts, the rearward projections of which are used for attaching the engine to the airplane mounting.

The crankshaft is of the built-up type and



A cross-section and details of the piston rod assembly. Jupiter engine.

manufactured from hardened and tempered 60 ton nickel chrome steel stampings. The crankshaft spigots in the maneton are registered by a stout taper key formed integral with the eye of the maneton, which is split on the crankpin center line and nipped up by a large diameter bolt and nut. The joint obtained is entirely free from any play or working, even under full throttle excess speed conditions. The crank cheeks have been slotted out and the balance masses pushed out in order to obtain the maximum effect for the minimum gross weight. The complete shaft is carried on two main roller bearings, located immediately behind each crank web, with a special double purpose spherical roller bearing at the propeller end, and a small white metal steady bearing at the tail end. The shaft is drilled throughout for lightness, communicating holes and blanking plugs allowing of the resulting chambers being utilized for oil circulation and distribution.

The master rod and the eight articulated rods are machined from 65 ton nickel chrome steel stampings. The built-up crankshaft allows the use of a solid big end for the master rod, which is lined with a hardened steel sleeve, bearing directly upon the bronze backed white metal lined bush floating on the crankpin. Pistons are of cast aluminum alloy, and are of the slipper type, carrying two gas rings and one oil scraper ring of special design. The gudgeon pin floats in both piston and connecting rod and is secured against end motion by a circlip.

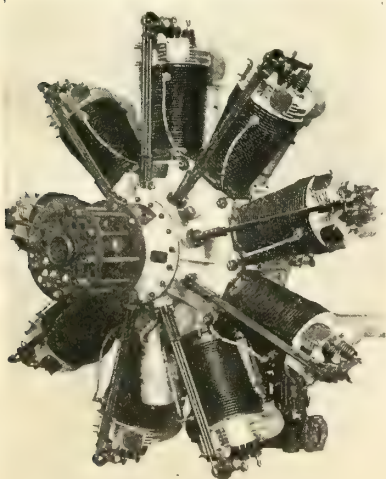
The cylinders are of composite construction. The barrels, machined from alloy steel

forgings, have an integral combustion head upon which the overhead valves (two inlet and two exhaust), seat direct. The head, which embodies the valve ports and carries the valves, valve guides and rocker mechanism, is of cast aluminum alloy of high heat conductivity, and is secured to the steel barrel by studs and set screws, a faced joint being made with the cylinder barrel to ensure the maximum heat conductivity. To compensate for the difference in expansion between the aluminum head and the steel securing studs, packing sleeves are fitted under the nuts, ensuring good contact between the head and the barrel throughout the range of working temperatures. Double concentric valve springs are fitted, and the valves are of cobalt chrome steel, with special hardened steel caps to take the thrust of the rocker screws.

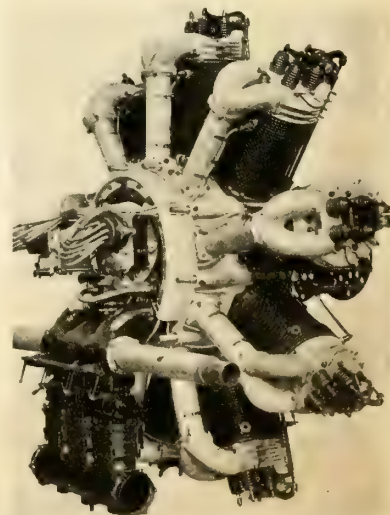
The two row large diameter four-lobed cam, runs concentric with the crankshaft front end and is driven from it by eccentric epicyclic gearing at $\frac{1}{2}$ engine speed in an anti-crank direction, operating by tappets and push rods the overhead rocker gear. The rocker gear is a special feature of the engine. The rockers are mounted on a bracket, which is secured at one end to the cylinder head and at the other end by a tie rod to the crankcase. This arrangement compensates for the radial expansion of the cylinders when hot and automatically maintains the desired valve clearances under all running conditions.

The carburetor specially designed and supplied for this engine consists of three variable jet type carburetors formed in one body and operated by one set of controls. This gives a very compact instrument which, while mounted low enough to allow of a good gravity feed, can be tucked up inside the cowling. The variable jet facilitates tuning and gives an exceptional range of altitude control.

An additional quality is the fuel economy obtained under throttled or cruising conditions. This carburetor was fitted to the



Propeller end, Bristol Jupiter engine.



Rear view, Bristol Jupiter engine.

The Pitcairn Mailwing



PITCAIRN MAILWING (Wright Whirlwind Engine)

HIGH performance, maneuverability, ease of maintenance and low cost of operation are the features incorporated in the design and construction of the Pitcairn Mailwing—a plane produced especially for economical contract air mail operation.

The fuselage is constructed along the well-known Pitcairn practice of welded steel tubing of square section.

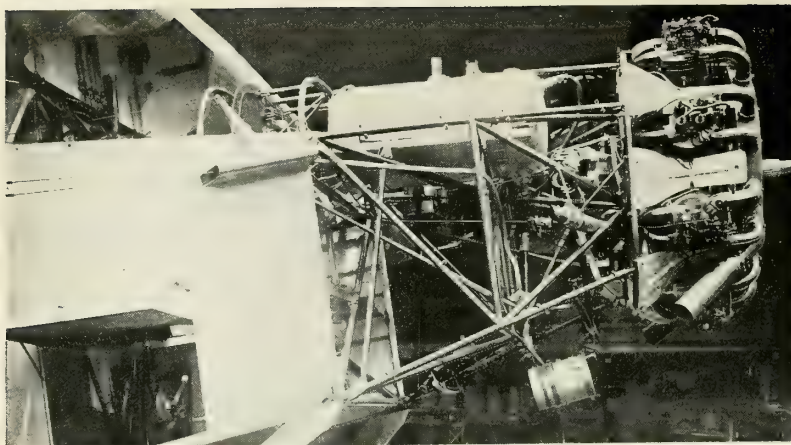
The wing section employed is a special development of our Engineering Division, giving wide speed range with a high load factor.

Equipped with the Wright Whirlwind J-5-C air-cooled engine of 200 horse-power, the Mailwing is characterized by its high performance and wide speed range and its remarkable maneuverability.

Overall span	33 ft.
Overall length	22 ft. 10½ in.
Wing area	252 sq. ft.
Weight empty, including batteries, landing lights, parachute flares, etc.	1742 lbs.
Total weight	2512 lbs.
Pay load	500-600 lbs.
Maximum speed	136 miles per hour
Minimum speed	45 miles per hour

We welcome your inspection of the Mailwing and our other aircraft either at the factory at Bryn Athyn, Pa., or at the flying field.

PITCAIRN AIRCRAFT INC
LAND TITLE BUILDING PHILADELPHIA



Installation of the Jupiter engine in the N.Y.-Rome monoplane "Old Glory."

Jupiter-engined Farman machine, winner of the French Coupe Zenith in 1926, which is essentially a flight fuel economy competition.

A special air intake elbow, heated by the hot oil drawn from the engine by the scavenge pump, prevents the freezing up of the carburetor, and to ensure thorough atomization of the mixture the induction elbow is exhaust heated. For machines of high altitude scout class, generally operating under very low temperature conditions, additional heat is provided by a special scuttle type air intake, drawing warm air off the lower cylinders.

The latest Jupiter exhaust ring has been developed particularly for the Series VI engine; the diameter of the ring has been reduced and the down pipes kept within the cylinder outlines, in order to cut down head resistance and afford the maximum possible fairway for gun fire.

Particular attention has been paid to the design and manufacture of these rings, to ensure their being an interchangeable and mechanical job, and special non-corrosive alloys have been used, making the life of these rings indefinite.

To simplify the installation, the rings are entirely supported from the engine, and lugs for the attachment of the cowlings are provided on the periphery of the ring.

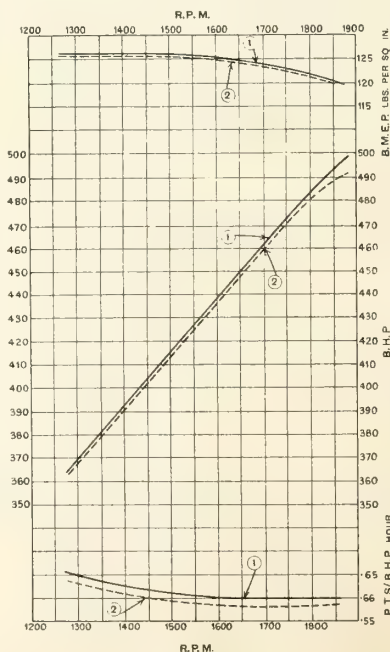
The Bristol Jupiter was the first engine embodying air-cooling principles to pass the official tests of the Air Ministry. This was accomplished in September, 1921, and it was some time before any other air-cooled engine was similarly successful. However, the success that was originally achieved with the Jupiter engine has been periodically repeated under official test, and its efficiency as a power unit is well established.

In the autumn of 1925 one of the latest Mark VI. engines passed the full Air Ministry 100-hours test with such remarkable success that it was submitted to a 25,000 miles cross country flight test under sealed conditions. The test was carried out under the supervision of the Air Ministry and the Imperial Airways, Ltd., and involved 225 hours actual flying time.

A more powerful development of Bristol type engine is to be used in one of the British Schneider Trophy races at Venice this year.

Specifications of the Mark VI Standard Commercial Bristol "Jupiter" Engine

Type	9 cylinder aircooled radial
Bore and stroke.....	5.75 in. by 7.5 in.
Total stroke volume.....	1,753 cubic inches
Compression ratio	5 to 1
Engine speed, normal	1,700 r.p.m.
Engine speed, maximum	1,870 r.p.m.
H.p. at sea level ...	420 b.h.p. at 1,700 r.p.m.
H.p. at sea level ...	460 b.h.p. at 1,870 r.p.m.
Propeller.....	direct drive, left hand tractor
Carburetor	"Bristol" triplex
Mixture control	variable jet
Ignition	fixed
Oil system	pressure 40 lbs. per sq. inch
Oil pump	duplex gear, 1 scavenge, 1 feed
Tachometer drive	$\frac{1}{4}$ engine r.p.m.
Weight dry	730 pounds
Fuel consumption, (max.) ...	27 gals. per hr.
Oil consumption, (max.) ...	1.25 gals. per hr.
Fuel consumption, cruising ...	22 gals. per hr.
Oil consumption, cruising.....	1 gal. per hr.



Power curves, Bristol Jupiter engine.
1—Readings taken before 100 hour test.
2—Readings taken after 100 hour test.

CARBURETORS ON RECENT RECORD FLIGHTS

IT is a notable fact that Stromberg carburetors were used on all of the recent transoceanic and record breaking flights. The adaptation of the standard Stromberg principles of carburetion to aircraft was started before the time of the World War. Constant research and development has been carried on since then. The Stromberg Company freely acknowledges its debt to the United States Army and Navy Air Services and to the engine manufacturers. Their laboratories have been constantly at the disposal of the company.

The basic principle has thoroughly proved itself and has never been varied from. The NA-T4 carburetor on the Wright Whirlwind engine is one of the latest models. This carburetor is the one used in the epochal flights made by Colonel Lindbergh, Chamberlin and Levine, Maitland and Hegenberger and Commander Byrd. With this same carburetor Chamberlin and Acosta set the world's endurance record of 51 hours and 20 minutes.

The development of this carburetor has been carried along with the development of the J engine. Originally this engine had three small single barrel carburetors, each carburetor separately feeding three cylinders of the nine cylinder engine. The general performance of this arrangement was very good, but in service it was quite difficult to keep the three carburetors properly synchronized over any long period of operation. Also, the use of three carburetors made a rather bulky installation and complicated the fuel piping. The next step on the J-3 and J-4 engines was the application of a single carburetor. A double barrel Model NA-U5 with various modifications was used. This arrangement gave good distribution and power.

With the development of the J-5 engine, it was decided to use a three barrel carburetor, thus combining the distinct advantages of the two previous types of installations. This is the present Model NA-T4 carburetor.

The carburetor is of the simple plain tube type with the three throttles all on one shaft. The float mechanism is of the efficient "Y" type which maintains the same level in the carburetor regardless of the angle assumed by the airplane in flight.

New seaplane records have recently been established—for speed over a 500-kilometer course carrying a useful load of over 1500 pounds, (136.023 m.p.h.); speed for 100 kilometers under the same conditions (147.263 m.p.h.); and for altitude carrying the same weight (22,178 ft.). In addition to this, the seaplane record for absolute altitude has been broken and rebroken, being finally set at 37,995 feet. These records were made by Lieuts. Barner, Callaway, Henderson and Champion of the United States Navy respectively.

The engine used in all cases was the new Pratt & Whitney Wasp 9 cylinder, air cooled radial, rated at 425 horsepower. The standard carburetor equipment for this engine is the Stromberg Model NA-Y7A.



“LIFE SAVER”*

The American-made Parachute Silk

THE development and perfection of “LIFE SAVER” Parachute Silk is distinctly an American contribution to the Progress of Aeronautics.

The use of “LIFE SAVER” Silk for parachutes insures the aviator a greater margin of safety than is obtainable in any other material. Oscillation is reduced to a minimum and ‘jerk’ in opening, particularly in delayed opening, is eliminated.

“LIFE SAVER” Silk *is woven and supplied exclusively by*

SCHWARZENBACH, HUBER & CO.

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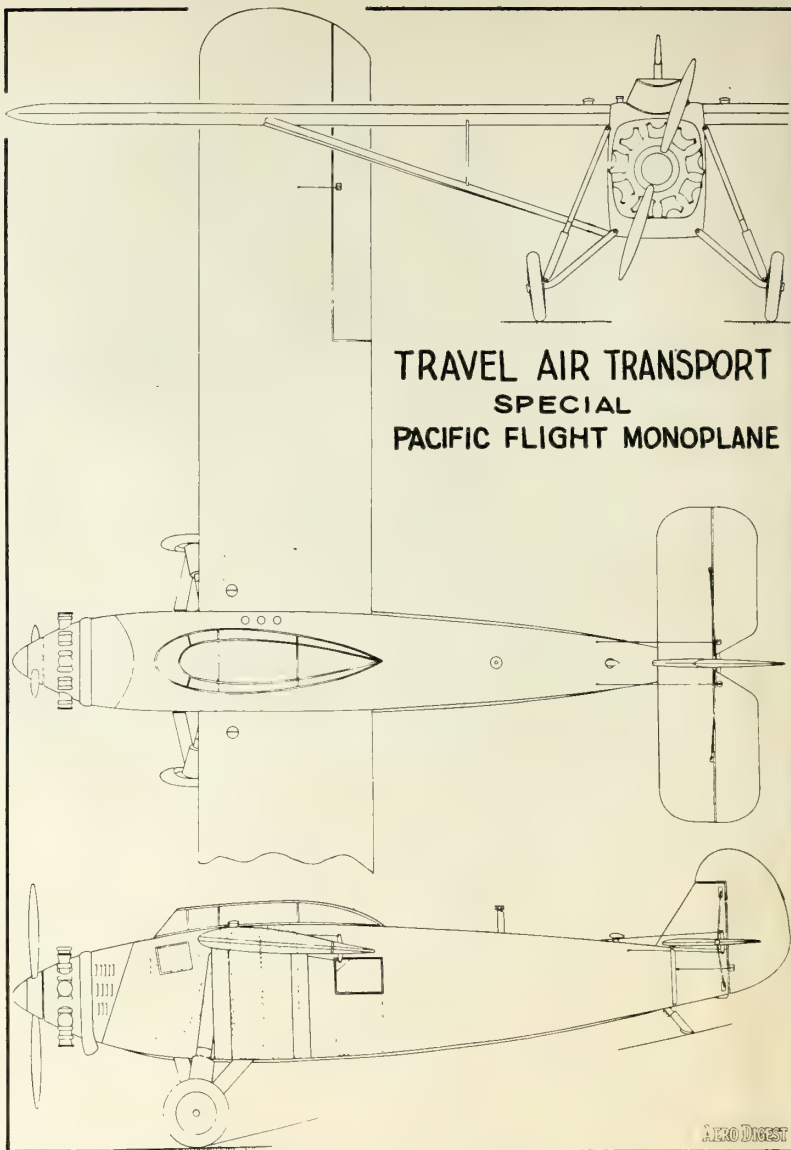
PACIFIC FLIGHT TRAVEL AIR MONOPLANE

THE two special monoplanes built by Travel Air for the Pacific flight, one of which, the "Woolaroc," won the Dole Prize, are about the same basic design as the standard model Travel Air Transport Monoplane. The cabin woodwork, upholstery and windows were omitted, of course, and the large fuel tanks which were built in three units were slung in the cabin section directly under the wings. These tanks did not completely fill the cabin and a compartment about four feet long is available for the navigator. For his use, an air-speed meter, altimeter, inductor compass dials and regulator, magnetic compass and speed and drift indicator were installed. The inductor compass generator is mounted about six feet to the rear of this section and can be easily reached inside the fuselage.

The main fuel supply is carried in the three aluminum tanks and their outlets lead to a wobble pump in the cockpit. Either or all these may be turned on at will thus affording means of balancing the airplane as desired. All the fuel from these tanks passes through the wobble pump and thence to an engine-driven gear pump where it is pumped to either the right or the left wing tank. A bi-pass valve at the hand wobble pump allows the fuel to be pumped around the gear pump should it cease functioning. In this manner the two gravity wing tanks are constantly left full, the overflow from one going into the rear main tank while the other is a pure reserve tank. Each wing tank has a capacity of 38 gallons and either can be used at will.

The two airplanes, which bear the names of "Oklahoma" and "Woolaroc" are practically identical except for the cupalo arrangement. In the former, this runs from the pilot's cockpit back to the rear of the navigator's compartment, while the latter encloses the pilot only.

Instruments carried in the cockpit of each plane consisted of the normal engine units, airspeed meter, altimeter, bank and turn indicator, rate-of-climb indicator, inductor compass regulator and indicator, and a magnetic compass. In addition, each carried radio equipment for receiving radio beacon

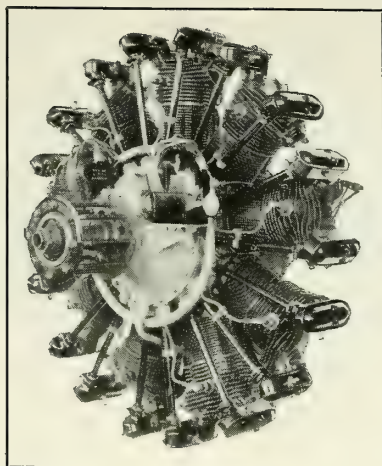


signals, an air raft and oars, one-and-one-half inch Very pistol and fifty rounds of various colored flares, seventy-five smoke

and flare pots and miscellaneous equipment such as food, personal equipment and the like. Each airplane had drift angle lines



Side view of Art Goebel's Travel Air Transport "Woolaroc", winner of the Dole prize.



Again the Wright Whirlwind Motor with Bohn Ring True Bearings Scores a Triumph

THE Woolaroc piloted by Arthur C. Goebel, winner of the \$25,000 Dole air race from Oakland to Hawaii, and the Aloha piloted by Martin Jensen, winner of second place, were both equipped with Wright Whirlwind Motors in which Ring True Bearings were used for both the Master Rod Bearings and the Crankshaft Rear Bearings.

In every major air feat of recent months Bohn Ring True Bearings have played their part in bringing the flight to a successful conclusion and placing America in the forefront of aviation progress and achievement.

BOHN ALUMINUM & BRASS CORP.
DETROIT, MICHIGAN

Also makers of Bohnalite Castings and Nelson Bohnalite Pistons

BOHNALITE

painted across the fuselage, stabilizer and elevator in addition to the speed and drift indicators mounted on the window sides. The wings and fuselage, etc., were completely bonded and metallized with copper braid while the engine ignition system had special shielding.

Several members of the fuselage were revised to accommodate the concentrated loads imposed by the main fuel tanks. Heat treated chrome molybdenum tubing was used throughout the chassis structure. Multiple cross wraps of rubber shock cord in tension were employed in the compression strut of the landing gear. 30 x 5 wire wheels with 32 x 6 tires were used, completely streamlined with fabric at the final take off.

The fuel used was supplied by the Phillips Petroleum Company of Bartlesville, Oklahoma and weighed only 5.68 pounds per gallon with a higher heat value per pound than normal aviation fuel. Mobiloil was used for lubrication.

Preliminary tests of these airplanes at the Travel Air Field carrying part loads proved very satisfactory. With 300 gallons of gasoline, 10 gallons of oil, pilot and all equipment installations, the "Oklahoma" took off after a run of 21 seconds with practically no wind. The airplane was then maneuvered violently and handled so well that this load was left in and several flights made to check the instrument installations, take off and landing times and fuel system operation.

Specifications

Engine	Wright Whirlwind J-5 CA
Propeller	Standard Steel
Wing area	308 square feet
Wing span	50 feet 5 inches
Wing chord	.81 inches
Average high speed	125 miles per hour
Length overall	30 feet 8 inches

Estimated Weights in Pounds

Weight empty (including complete installations, tanks, shielding, special instruments)	2250
Fuel (425 gal. at 5.68 lbs.)	2420
Oil (18 gal. at 8 lbs.)	144
Raft, smoke bombs, signal equipment, etc.	35
Radio equipment	45
Miscellaneous	35
Pilot	165
Navigator	156

Gross weight fully loaded (estimated)	5,375
Wing loading per square foot	17.4
Power loading per h.p. (assuming 230 h.p. at 1900 r.p.m.)	22.9

FRICITION OF AVIATION ENGINES

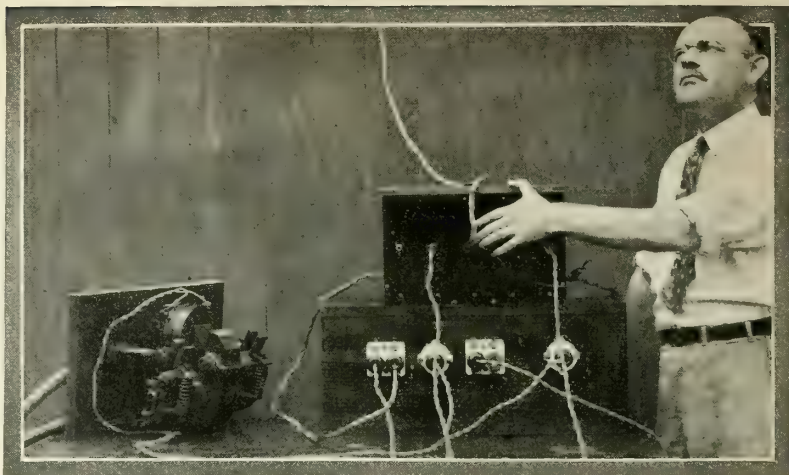
By S. W. SPARROW AND M. A. THORNE

Synopsis of N. A. C. A. Report No. 262

THE first portion of this report discusses measurements of friction made in the altitude laboratory of the Bureau of Standards between 1920 and 1926 under research authorization of the National Advisory Committee for Aeronautics. These are discussed with reference to the influence of speed, barometric pressure, jacket-water temperature, and throttle opening upon the friction of aviation engines.

The second section of the report deals with measurements of the friction of a group of pistons differing from each other in a single respect, such as length, clearance, area of thrust face, location of thrust face, etc.

Report No. 262 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.



Mr. T. Spooner, and the automatic lighting device he has developed.

AUTOMATIC AIRPORT LIGHTING DEVICE

THE successful automatic lighting of an airport was demonstrated on August 23d at Bettis Field, McKeesport, Pa., when the hum of the motor of an air mail plane, 1500 feet above the field, switched on a bank of floodlights and Merle Moltrup, chief of the air mail pilots at Bettis Field, brought his plane to the ground in the path of light turned on his plane's engine. The sound-sensitive agency which automatically closes the lighting circuit was developed by Mr. T. Spooner, Research Engineer, of the Westinghouse Electric and Manufacturing Company.

The device consists of a microphone, resonant and amplifying circuits, a time element relay and contactors. The hum of the motor is picked up by the microphone which is mounted in a vertical position in order that it will best catch sound waves from the air above. The current thus induced in the microphone circuit is transmitted to a resonant circuit tuned to the frequency of the hum of the motor, which not only amplifies it, but eliminates all currents which might be induced by other sounds such as voices, automobile horns, etc. Further insurance that the device will only be actuated by the motor hum is provided by the time element relay which is so adjusted as to function only after the sound has persisted for an unbroken period of ten seconds. This prevents the functioning of the apparatus through the reception of sporadic sounds, even though they have the same frequency as the tuned circuit. The actual closing of the circuit is effected by contactors.

The floodlights installed at Bettis Field are a new type of airport projector developed by the Westinghouse Company. They are designed to furnish sufficient illumination over an uneven field, at the same time keeping the source of light low and eliminating objectionable glare in the eyes of the aviator. Each projector consists essentially of a steel drum 25 inches in diameter and 19 inches deep, mounted on a 2½ inch pipe standard.

Mounted within the drum are a lamp soc-

ket with vertical, lateral and in-and-out focusing adjustments, a 23 inch parabolic metal reflector of such focal length that all reflected rays come approximately within a 3 degree divergence, and a system of louvers to absorb all those rays of direct light the upward tilt of which exceeds 1½ degrees. A spread lens mounted in front of the shell gives a horizontal spread of 45 degrees to the beam.

The unit is so mounted on the pipe standard that it may be rotated horizontally, or tilted vertically two degrees above and six degrees below the horizontal. It is dust and rain proof.

When equipped with a 1500 watt projection lamp and spread lens, the unit gives a maximum intensity of 250,000 C. P., with an estimated intensity with plain lens of 3,000,000 C. P. The projector may be accurately focused by the use of a daylight lampsetter developed for the purpose.

FACTORS IN THE DESIGN OF CENTRIFUGAL TYPE INJECTION VALVES FOR OIL ENGINES

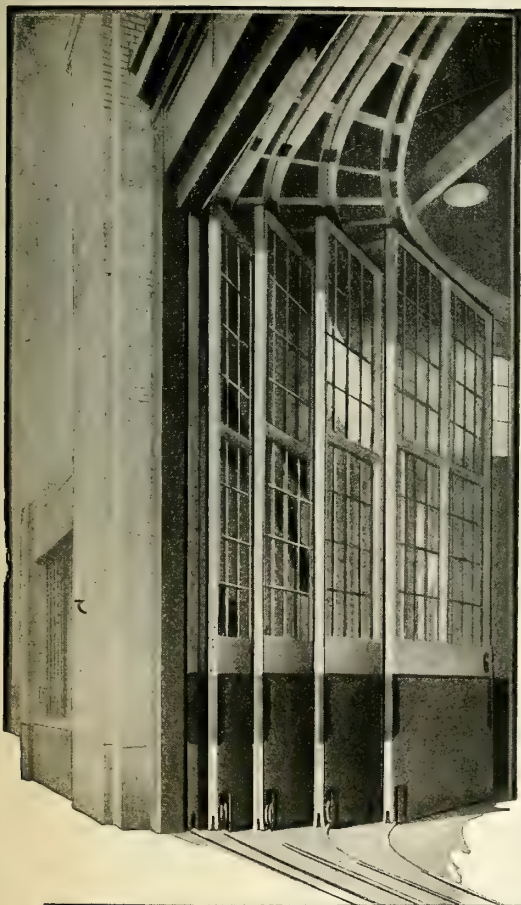
By W. F. JOACHIM AND E. G. BEARDSLEY
Synopsis N. A. C. A. Report No. 268

THIS research was undertaken at the Langley Memorial Aeronautical Laboratory, in connection with a general study of the application of the fuel injection engine to aircraft. The purpose of the investigation was to determine the effect of four important factors in the design of a centrifugal type automatic injection valve on the penetration, general shape, and distribution of oil sprays.

The general method employed was to record the development of single sprays by means of special high-speed photographic apparatus capable of taking 25 consecutive pictures of the moving spray at a rate of 4,000 per second. Investigations were made concerning the effects on spray characteristics, of the helix angle of helical grooves, the ratio of the cross-sectional area of the orifice to that of the grooves, the ratio of orifice length to diameter, and the position of the seat. The sprays were injected at 6,000, 8,000, and 10,000 pounds per square-inch pressure into air at atmospheric pressure and into nitrogen at 200, 400, and 600 pounds per square-inch pressure. Orifice diameters from 0.012 to 0.040 inch were investigated.

It was found that decreasing the pitch of the helical grooves and thus increasing the centrifugal force applied to the spray increased the spray cone angle considerably, although the percentage increase was much less in dense air than in the atmosphere. On the other hand, the spray penetration decreased with increase in the amount of centrifugal force applied. About twice as much spray volume per unit oil volume was obtained with a high centrifugal spray as with a noncentrifugal spray.

Report No. 268 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.



HANGAR DOORS

That Coast Open

Truscon Hangar Doors coast open! Roller bearings and correctly designed tracks and pulleys make it possible to open or close them with one arm! They are rigid, perfectly aligned, will not warp or stick and are of rust resisting copper-steel. They give fire protection and freedom from the danger of high winds, yet their ample window space admits plenty of daylight when closed. They roll back into small space for the free and unobstructed passage of planes. The nation-wide organization of Truscon will give you suggestions, estimates and complete information.

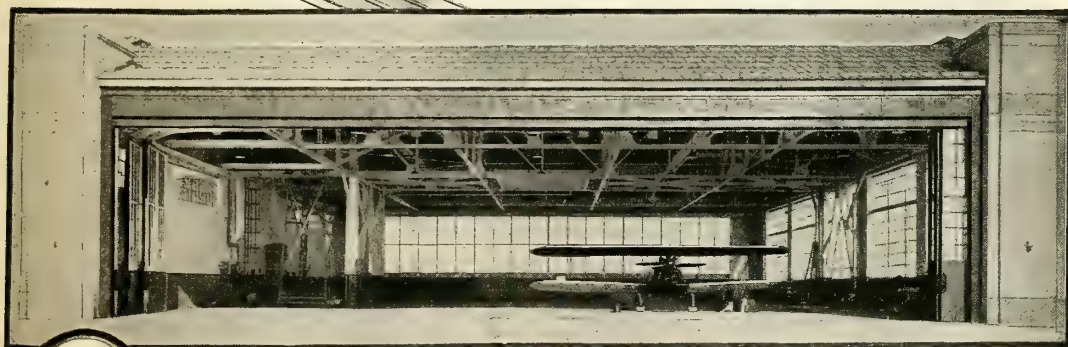
Write for descriptive literature

TRUSCON STEEL COMPANY
YOUNGSTOWN, OHIO

ESTABLISHED 1903

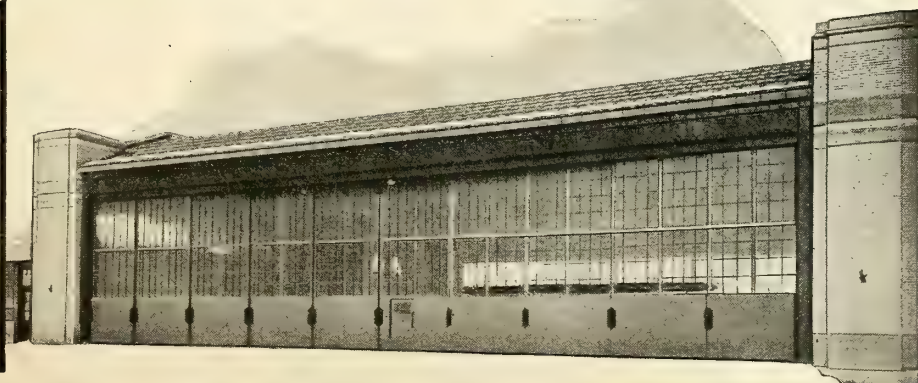
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TRUSCON

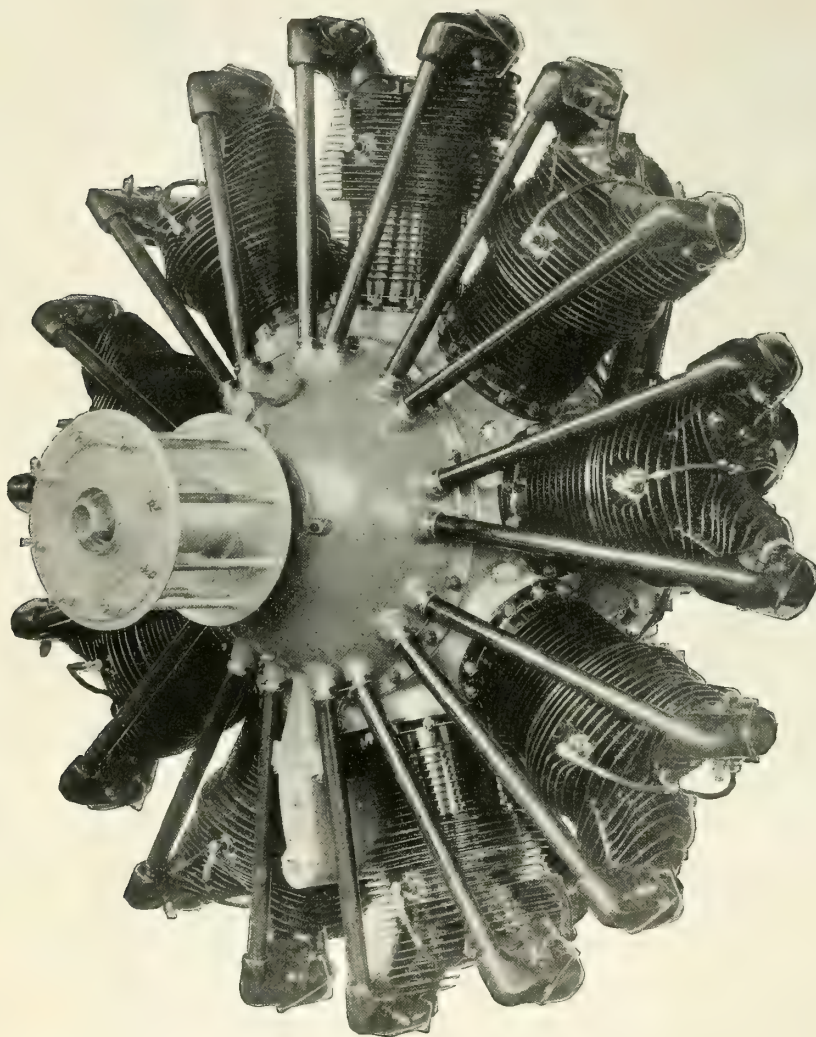


*Airport,
Lansing,
Illinois.*

*Albert Kahn,
Inc.
Architects
and
Engineers.*



THE 425 h.p. PRATT AND WHITNEY WASP ENGINE



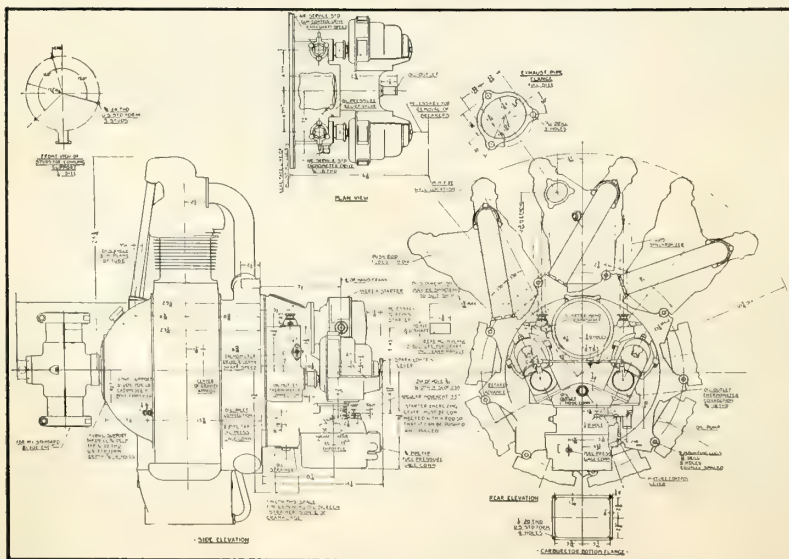
THE design of the "Wasp" engine incorporates a number of fundamentally new and different characteristics. To provide for high crank speeds a solid big end is used for the master rod, together with a built-up crankshaft. The split master rod has long been the limiting factor for high crank speeds on the larger radial types. Rigid crankshaft support is absolutely necessary and for this purpose a forged instead of cast aluminum crankcase is used. The crankcase consists of two identical pieces facing each other and held together by nine through bolts, one between each two cylinders. This construction is both strong and light. As the load is equally divided between the two main bearings, no working takes place between the crankcase sections. By means of the solid master rod, large diameter crankshaft, unique crankcase, and method of engine support, high crank speeds have been provided for.

The rear sections, of which there are two, the blower and rear, form an assembly by themselves. This makes it possible to divide the engine into two units for assembly as well as service work, the power end consisting of the main case and nose, the shaft, rod, pistons, cylinders, and valve gear, and the accessory end including the mounting supercharger and gearing, and all accessories and their drives. Should occasion arise, the "power end" can be removed from an airplane and another substituted without disturbing the "accessory end." This is possible because the engine is supported on the blower section, and the support is arranged as nearly on the center of gravity of the engine, and as far removed from the crankshaft as possible.

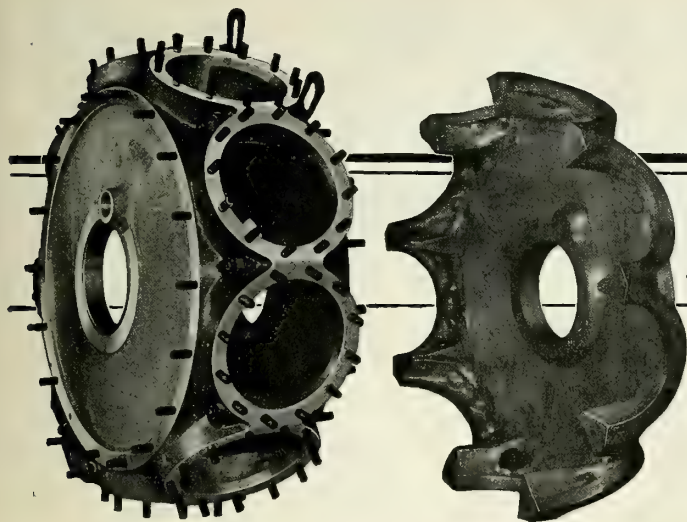
The cylinder disposition of the radial type provides uniform and maximum cooling for each cylinder. The cylinder is built up with an aluminum head screwed and shrunk on a steel barrel with integral fins. Valve seats are bronze shrunk into the aluminum head, while the spark plugs screw directly into the aluminum. It has been found possible to operate "Wasp" engines on straight aviation gasoline at rated power with .48 fuel consumption, an excellent measure of good cylinder cooling. On standard straight fuel 130 pounds mean effective pressure is obtained with zero pressure in the intake system, while 140 pounds has been consistently developed with 30 per cent benzol or its equivalent.

The rocker boxes are formed as a part of the cylinder head castings, and are provided with a quickly detachable cover completely enclosing both the rocker arm and the valve spring. In conjunction with the telescopic push rod enclosure tube, the whole valve gear is thus enclosed, but quickly accessible for inspection. The rocker arms are mounted on small ball bearings which obviate the need for daily lubrication. Timing compensation for the elongation of the cylinders is provided in the cam and tappet.

Grouping all the accessories in the rear has resulted in an engine very easy to cowl, and provides for unusually symmetrical fuselage lines. Equally as important as these aero-



INSTALLATION DRAWING PRATT & WHITNEY "WASP" ENGINE



Wasp & Hornet Leadership

One piece Master Connecting Rod and Built-up Crankshaft



Divided and Forged Aluminum Main Crankcase



Grouping of all accessories at the rear of the engine



Complete enclosure of all working parts

Forged and Divided Aluminum Main Crankcase

The Wasp
425 H.P.
at 1900 R.P.M.
Weight 650 lbs.

The Hornet
525 H.P.
at 1900 R.P.M.
Weight 750 lbs.

Pratt & Whitney engines feature a forged instead of cast aluminum main crankcase, consisting of two identical pieces facing each other and held together by nine through bolts, one between each two cylinders.

The forging increases the strength two-fold and eliminates the danger of casting defects. The design divides the load equally between the two main bearings and provides rigid crankshaft support.

This basic feature in both the "Wasp" and the "Hornet" has paved the way for high powered, big displacement air-cooled radials and is making possible the broad application of this type of engine.



THE
PRATT & WHITNEY AIRCRAFT CO.
HARTFORD CONNECTICUT

DEPENDABLE ENGINES

dynamic features is the complete protection from the elements of all accessories. Ready access may be provided to all the accessories through inspection doors in the fuselage. In the one group provision is made for the two magnetos, starter, two synchronizer heads, tachometer, generator, oil pump, and fuel pump, as well as a step-up gear for the supercharger.

The "Wasp" engine is standardly equipped with a General Electric type of rotary distributor and supercharger. This type lends itself extremely well to radial design, and with little addition to the weight.

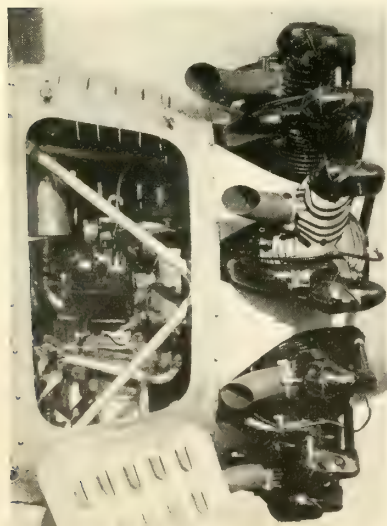
Specifications

Average h.p. at sea level425 h.p.
R.p.m. at sea level1900
Weight650 pounds
Bore5.75 inches
Stroke5.75 inches
Displacement1344 cubic inches
Length over all43 3/4 inches
Diameter over all50 5/8 inches
Fuel consumption (per h.p. hr.).... .52 lbs.
Oil consumption (per h.p. hr.).... .025 lbs.

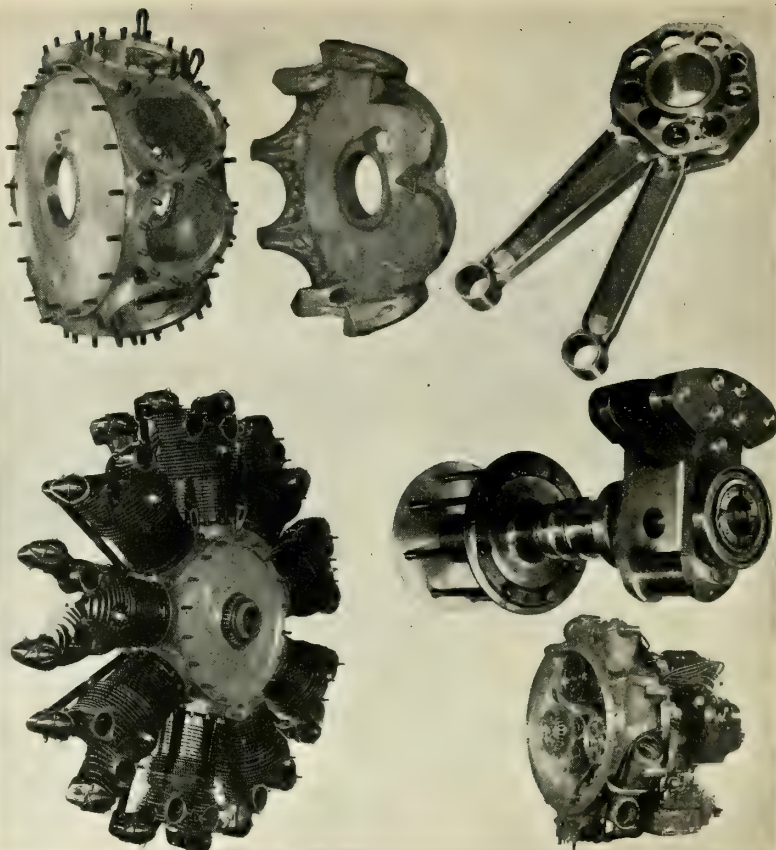
After careful analysis and exhaustive, comparative tests, the Navy Department announced last summer the adoption of the air-cooled radial in the 400 horsepower size, which includes powerplants for the fast single and two-place fighting ships.

While the "Wasp" has been specifically designed for a definite requirement in the Naval program, it is just as applicable for many types of commercial craft. A general comparison with the well known Liberty water-cooled powerplant discloses approximately the same horsepower with a weight saving in the engine of about 250 pounds, and installed weight saving of approximately 500 pounds, which includes the cooling system for the Liberty. This large saving in weight may be used for additional pay load for commercial ships.

The first installation of the "Wasp" in a commercial airplane has been made by the Ford Motor Company. This plane is being placed in the regular commercial service on their lines.



P. & W. engine in a Vought plane.



Details of units and parts of the Pratt & Whitney Wasp engine.

PYRALIN USED ON SPIRIT OF ST. LOUIS

ACCORDING to a representative of Ryan Airlines, Inc., Pyralin sheet, 60/100 in. thickness, was used for the windows at each side of the cockpit, also in the overhead window of the Spirit of St. Louis on Colonel Lindbergh's flight from New York to Paris.

The adaptability and desirability of Pyralin for glazing in airplanes are apparent when it is considered that it cannot be shattered and, besides, is transparent, thereby providing the required visibility. It is less susceptible than glass to the adherence of moisture and is also less affected by pressures which are met in high altitudes.

Commander Richard E. Byrd's plane, "America," also was fitted with Pyralin windows. Several types of commercial planes use Pyralin for glazing, while a majority of the standard planes used by the Government service are similarly equipped.

STANDARD ATMOSPHERE CHART AVAILABLE

THE accompanying Standard Atmosphere Chart has been officially adopted by all interested U. S. Government organizations for aeronautics and related purposes. The values of the temperature, pressure, and density at all altitudes agree closely with

the yearly average of U. S. meteorological data at 40 degrees North latitude. Formulas and complete tables are published in the National Advisory Committee for Aeronautics' Technical Reports Numbers 147, 218 and 246. Copies of the Standard Atmosphere Chart, size 7 1/2 in. by 11 in., may be obtained from the Department of Commerce, Bureau of Standards, at a cost of 5 cents.

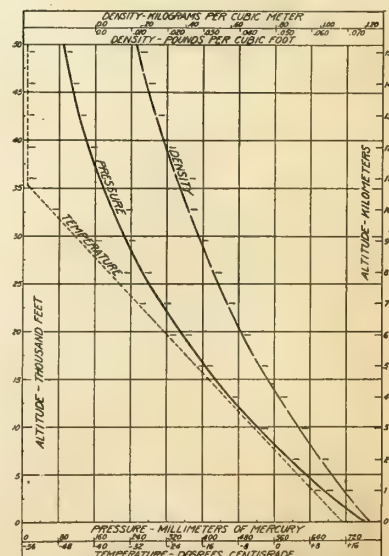


Chart of standard atmosphere.



TRAVEL AIR



BOEING



STINSON



BUHL



ALEXANDER



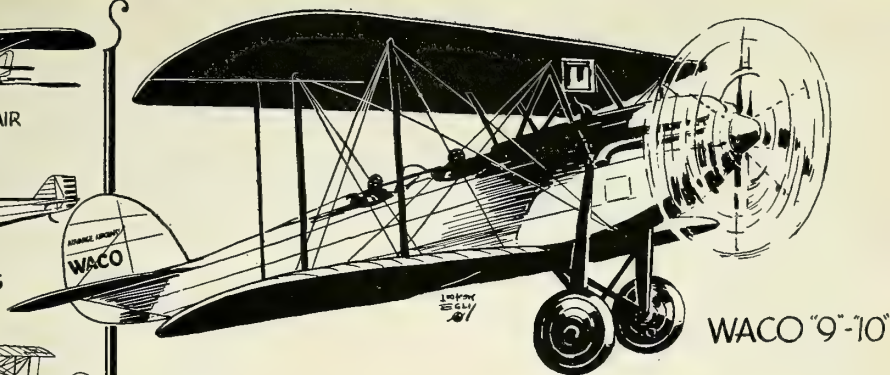
FORD - STOUT



HESS



RYAN



WACO "9-10"

Leaders in commercial aircraft production use AIRCRAFT BERRYLOID

All of the outstanding manufacturers of American commercial airplanes now use Berry Brothers' Progressive Aircraft Finishes.

Recognition of the superiority of Aircraft Berryloid, Lionoil and other of Berry's durable, highly protective finishes has become almost unanimous.

This remarkable record is due to many things other than salesmanship.

Expert knowledge of technical requirements is one factor. Dependable, uniform, long-lasting quality is another. Availability of Aircraft Berryloid in more than 40 standard colors is a third reason. Service—such as never before attempted by any manufacturer of aircraft finishes—is also a contributing factor.

Used by 95% of all manufacturers of commercial airplanes in America—a high tribute and exceptional recommendation for aircraft finishes made by Berry Brothers.



BERRY BROTHERS

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THE BACH AIR YACHT

A DECIDEDLY new note in American aircraft design has been embodied in the new ten-place tri-motored Bach Air Yacht, which was flight tested August 17th at Clover Field, California. An actual speed of 135 m.p.h. was attained with motors turning at less than full throttle, seven passengers aboard and sand bags equivalent in weight to two more passengers.

Several characteristics of the Bach Air Yacht forcibly impress one conversant with the practical necessities of the multi-place ship now in demand by airways. The landing gear tread is 17 feet in width, greatly facilitating take-off and set-down on uneven ground. The tapered wing, semi cantilever, strongly braced is another feature emphasizing the structural safety factor, and the rigid construction of the fuselage built in the form of a stout shell completely surfaced with plywood affords all the protection of a closed motor car.

Inspection of this Bach creation reveals an airplane admirably adapted to the demands of airways passenger service. The whole purpose of the design centers around this one idea. The ship has demonstrated that flight can be maintained on the center engine alone or any combination of the smaller wing engines. The center engine is a 250 h.p. Waterman, nine-cylinder, air-cooled radial. The two wing engines are five-cylinder Kinners of 100 h.p. each and are mounted several feet behind the center engine.

The wing engine mounts are suspended in such a manner as to absorb most of the vibration within the mounts. Streamline cowling encloses these engine mounts reducing resistance to a minimum. Drag has been eliminated to a great degree, exposed surfaces being faired or streamlined.

The landing gear has proved highly efficient in tests. Landing shock is taken up by a hydraulic absorber permitting a vertical displacement of 14 inches. Lesser taxiing shocks are absorbed by conventional rubber shocks enclosed within the wing motor mounts. Sauzedde wheels and brakes mounting 35 x 8 inch tires are controlled in unison by a hand brake lever within the cockpit or operated independently for taxiing by the rudder bar.

The pilots' cockpit is located in the nose of the fuselage immediately behind the center engine. A curved windshield conforming to the general outline extends up to the

entering edge of the wing affording the pilots nearly 100 per cent visibility. Dual Dep controls are used and pilot's seats are arranged on either side of a large door giving easy access to the passenger cabin.

Fuel tanks are located in the wing center section. They carry sufficient gasoline for seven hours' flight. Oil reservoirs are built in the engine mounts within the cowlings.

The luxurious passenger cabin has a displacement of 228 cubic feet. The walls and arched ceiling are finished in matched grain gumwood. Deep comfortable chairs; satin finish silver fixtures; wide non-shatterable glass windows, adjustable from within; electric cigar lighters; card tables; concealed ice water tank; hot water and wash stand, and a toilet are some of the conveniences incorporated in the cabin appointments. In addition to the passengers compartment there is a luggage space of 40 cubic feet.

The whole ship may be converted into a freight transport in ten minutes. Control surfaces are operated without exertion by the pilot although only the rudder is of the balanced type.

The Air Yacht is a development of the earlier Bach Aircraft Company cabin type planes. The C-S 1, a small three-place completely enclosed cabin type biplane, was the first of this line. The C-S 2, a four-place biplane of the cabin type with the characteristic all Haskelite fuselage, followed as a later development.

These three types comprise the present Bach line and in each case the ships have demonstrated a remarkably high degree of air-worthiness.

Official tests have not yet been made of the ceiling or angle of glide.

The specifications and dimensions of the Bach Air Yacht are as follows:

General	
Span	52 feet
Length	36 feet
Areas	
Wing area incl. ailerons.....	412 square feet
Area of ailerons	36 square feet
Area of control surfaces.....	63 square feet
Weights	
Weight empty	2650 pounds
Weight, full load	5500 pounds
Performances	
Landing speed	40 miles per hour
Cruising speed.....over	100 miles per hour
Full throttle speed over	120 miles per hour
Fuel capacity	150 gallons

MacWHYTE WIRES ON BOEING MAIL PLANES

ALL of the tierod stock, streamline inter-plane and empennage brace wires used on the twenty-five Boeing mail planes which are being used on Boeing Air Transport's western division of the transcontinental air mail route were supplied by the MacWhyte Company of Kenosha, Wisconsin. That satisfaction has been rendered is attested to by the letter received by the MacWhyte Company from Mr. Gardner Carr, purchasing agent for the Boeing Airplane Company, in which he states: "We have used MacWhyte products for the past several years and are very much pleased with the service and co-operation received."

THE Macwhyte Company recently published a catalog and hand book on aircraft wires, cables, cords, tie rods, etc., that fills a long felt want. It contains full information on measurements of wires, terminals and fittings, also instructions on how to order.

A safety feature is introduced that will mean much to flyers who have had trouble with wires breaking—a new terminal that eliminates the cause of much of the trouble.

The Macwhyte Company will supply copies of the catalog on request and full information on the new terminal.

U. S. CIVIL SERVICE EXAMINATION

ASSOCIATE STRUCTURAL ENGINEER
(AIRCRAFT)

THE United States Civil Service Commission announces an open competitive examination for Associate Structural Engineer (Aircraft). A vacancy in this position in the Air Corps, Materiel Division, Wright Field, Dayton, Ohio, at a salary of \$3,000 to \$3,600 a year, and vacancies in positions requiring similar qualifications, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Applications must be on file at Cincinnati, Ohio, not later than September 10, 1927.

Applicants should at once apply for Form 2600, stating the title of the examination desired, to the Secretary of the Sixth Civil Service District, Government Building, Cincinnati, Ohio; to the Secretary, Board of U. S. Civil Service Examiners, Post Office, Dayton, Ohio, or to the Secretary of such Board at Wright Field, Dayton, Ohio.



THEN CHOOSE AVIATION!

Think what Aviation offers you. Thrills such as you never had before! The praise and plaudits of the multitude. And a chance to get in on the ground floor where rewards will be unlimited!

Easy to Become An Aviation Expert!

ARE YOU a red-blooded, daring he-man? Are you eager for a life of constant thrills, constant excitement and fascinating events? Do you crave adventure, popularity, admiration, and the applause of great crowds? Then why not get into the Aviation Industry—the greatest adventure since time began—the greatest thrill ever offered to man?

Aviation is growing so swiftly that one can hardly keep track of all the astonishing new developments. Air-mail routes have just been extended to form a vast aerial network over the entire U. S. Airlines and airplane factories are springing up all over the country. Men like Henry Ford are investing millions in the future of commercial Aeronautics in America! The possibilities are so tremendous that they stagger imagination!

Big Future

Everything is set for the greatest boom in history. The fortunes that came out of the automobile industry and out of motion pictures will be nothing compared to the fortunes that will come out of aviation! There is just one thing holding it up—lack of trained men! Even in the beginning thousands will be needed—and generously paid. The opportunities open to them cannot be overestimated. Those who qualify quickly will find themselves on the

road to undreamed of money—success—popularity—and prominence!

Get into this thrilling profession at once while the field is new and uncrowded. Now—by a unique new plan—you can quickly secure the basic training for one of these wonderful high salaried jobs, at home, in spare time. Experts will teach you the secrets—give you all the inside facts that are essential to your success. And, the study of

Aviation is almost as fascinating as the actual work itself. Every lesson is chock-full of interest—and so absorbing that you actually forget you are studying. But best of all are the ultimate rewards you are fitting yourself to gain!

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Send the coupon for our new, free book, just out—"Opportunities in the Airplane Industry." It is vitally interesting, reads like a romance and tells you things about this astonishing profession you never even dreamed of. This book is so fascinating it could easily sell for a dollar. We offer a limited number FREE. Write for yours today.



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Address.....
City..... State.....

THE BREESE MONO-PLANE "ALOHA"

THE "Aloha" was built by the Breese Aircraft Co., of San Francisco. Mr. Vance Breese, president of the company, will be remembered as the pilot of the Ryan M-1 during the 1926 Reliability Tour. He is credited with over eight hundred hours in this type monoplane, including several hundred hours of night flying with the Pacific Coast Air Mail.

The detail design and stress analysis was handled by Mr. J. K. Northrop of Santa Monica. The "Aloha" is a standard cabin with gas tanks installed in the space usually occupied by passengers. The navigator's compartment is aft of the normal cabin and fitted with a special floor chair and chart table.

Mr. Jensen ordered the plane on August 5th when it was about 80 per cent finished as a cabin plane. The plane was test flown on August 8th and was ready for the start on August 12th. Because of this rush it was necessary to install four 85-gallon tanks in the ship after it reached the field. These tanks, with the two 40-gallon wing tanks, gave him a capacity of 400 gallons. Oil was carried in two tanks.

The fuselage is of the rigid welded steel tube type and the wings are conventional truss rib, I beam and tie rod construction. The ailerons and entire empennage are of welded steel tubing. The chassis is made of chrome molybdenum steel tubing and is of the split axle type, equipped with Sauzedde wheels and brakes.

The adjustable lift struts are made of duralumin formed to a streamline shape.

The cabin is fitted to accommodate four or six passengers.

Specifications

Span	41 feet
Chord	81 inches
Overall height	10 feet 6 inches
Overall length	27 feet
Aerofoil	Clark Y
Engine	Wright J-5-C-A
Gas capacity	400 gallons



The Camérez engine installed in the Waco Ten commercial plane.

Oil capacity	15 gallons
High speed	135 miles per hour
Cruising speed	100 to 115 miles per hour
Service ceiling	15,500 feet

Areas (in square feet)

Wing (including ailerons)	260
Stabilizer	22.5
Elevators	19
Fin	5.5
Rudder	11

Weights (in pounds)

Weight empty	1550
Pilot	165
Navigator	150
Navigating instruments	50
Signal equipment	20
Gasoline tanks	300
Oil tanks and supports	25
Special fuel lines	12
Wobble pump	3
Special floors and tank supports	80
Fresh food	5
Emergency rations	15
Drinking water (5 gallons)	42
Gasoline (400 gallons @ 6.14)	2455
Oil (15 gallons @ 7.50)	113
Gross flying weight	4985
Disposable load	3435
Weight per square foot	19.17
Weight per h.p.	22.65

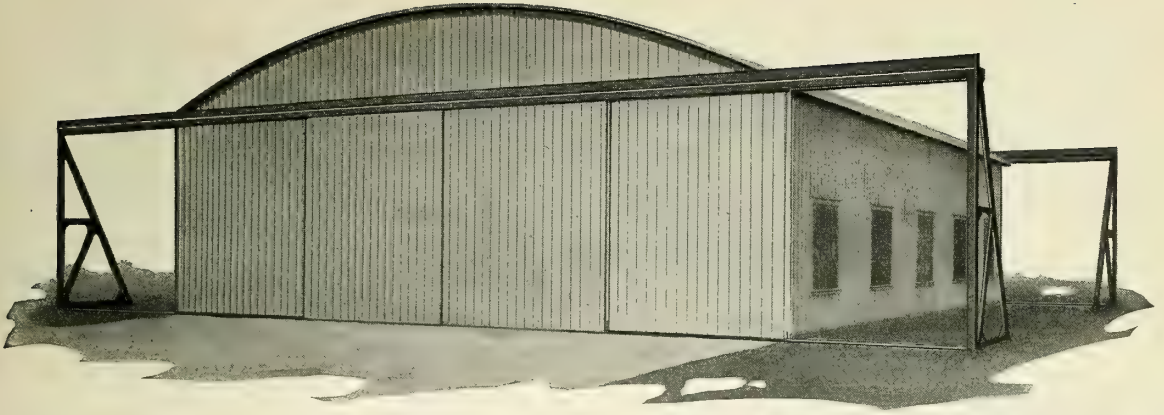
CAM ENGINED "WACO TEN" DEMONSTRATED

MAJOR TIPTON and John Hambleton of Baltimore flew to the factory of the Fairchild Camérez Engine Corporation at Farmingdale, Long Island, on July 27th, to witness a demonstration of the cam engine. Mr. Hambleton first took off the Waco Ten with the Fairchild Camérez cam engine, after which Major Tipton flew it. Tipton startled the onlookers by putting the Waco through a series of maneuvers rarely done with a commercial plane. He then took off and climbed at a very steep angle. After a sharp bank, he "looped" the Waco three times, following this with some left and right hand spirals. The Major dived the ship with the throttle wide open on four or five occasions and then zoomed, climbing practically vertically. The improved performance made possible with the cam engine, as compared with the OX-5 installation, makes the Waco perform almost like a pursuit ship.

A detailed description of the Camérez engine appeared in the August issue of AERO DIGEST; drawings of the production type Waco Ten appeared in the May issue.



The Breese monoplane which won second place in the Dole race from California to Hawaii.



MASON CITY'S Choice!

— *this type of FIRE-RESISTANT hangar*

THE American Legion-Chamber of Commerce Airport at Mason City, Iowa has a Butler *Ready-Made* Steel Building for its hangar.

The type selected by Mason City and which is shown above is used not only for individual hangar but also as large hangars for airports.

Butler *Ready-Made* Steel Hangars are non-combustible. They are made entirely of steel. The walls and roof sheets are 24 gage tight-coated galvanized steel. All sheets have deeply drawn paneled corrugations. These corrugations add strength and stiffness to all sheets.

The doors operate on rails that open and close without special effort.

There is plenty of light in Butler Hangars!

This is a most desirable feature when working on machines.

Wall and roof sheets are bolted together and to the steel frame by means of galvanized bolts. This provides a secure fastening for the sheets and avoids the noise of a loose rattling sheet. In addition the tight fit of the bolted sheets makes an unlined Butler Building practically as tight as a lined building where wall and roof sheets are fastened together by nails bent around purlins and girts.

At any time Butler *Ready-Made* Steel Buildings may be economically enlarged or if desired they may be taken down, moved and re-erected with practically 100% salvage.

Send for interesting prices

Prices are attractive and are quoted f.o.b. plant or erected. Send for more details today.



Butler Manufacturing Company
 Kansas City, Mo. Minneapolis, Minn.

New York Office: Room 701, 44 Whitehall St.

Say you saw it in AERO DIGEST

THE ATLAS VALVELESS 120 H.P. AIRCRAFT MOTOR

AFTER several years of research and practical tests, the Aircraft Holding Corporation of Los Angeles, Calif., is producing a new type of radial air-cooled aircraft motor.

The 120 h.p. size known as the "Atlas" is a stationary radial having eight cylinders and weighs with its supercharger 260 lbs. Work is already in progress on the second size to be known as the "Ajax". This motor is a six cylinder 80 h.p. size.

These engines operate on the two-stroke principle, each cylinder firing a power stroke to the propeller shaft every time the piston rises to the head of the cylinder. This makes a total of eight power strokes per revolution in the 120 h.p. size as against half this number for a valve motor having the same number of cylinders and working on the four-stroke principle. In other words, a motor of this type having eight cylinders will give a firing regularity and flow of power equal to a four-stroke motor having sixteen cylinders.

Due to the absence of valves and extensive

cylinder head mechanisms the motor has a 15 per cent smaller overall diameter than any equivalent radial motor having valves. This decrease in overall diameter accounts for a decrease in head resistance while the absence of valves increases both the reliability and running life of the motor. Top overhauls are never necessary, the only necessity for taking the motor down being for the replacement of pistons or rings. There are no cams in the motor and the only gear used is the one which operates the accessory drives.

The entire absence of openings in the cylinder heads eliminates the possibility of oil escaping. The cylinder head is machined integral with the barrel, the only openings being the spark plug holes.

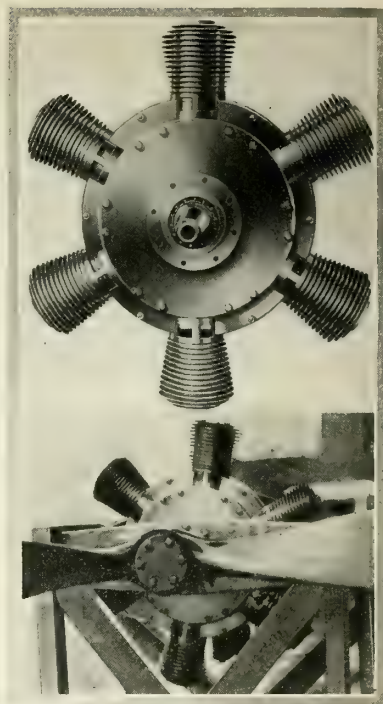
Cylinders are turned with heads and fins integral from solid alloy steel forging. The crank case is of forged duralumin. Mixture is supplied to the crank case under a variable pressure of from 1.5 lbs. to 10 lbs. per sq. in., generated by a compact supercharger. Pressure can be varied at the will of the operator to compensate for decrease in atmospheric pressure and loss of power at altitudes.

The supercharger is of the positive pressure built in type, running at engine speed and forcing mixture to the engine even at starting speeds rather than requiring a considerable lapse of time to build up its pressure as in the high speed turbine systems. Instead of supercharged air being blown through the carburetor as in existing types, this supercharger sucks mixture from the carburetor and acts as a powerful agent in further breaking up the particles of gasoline before passing the mixture on to the cylinders. The rotor is driven directly from the crankshaft.

Improved scavenging of the burned mixture in the cylinders is obtained by the placing of large exhaust ports at the bottom of the stroke on diametrically opposite sides of the cylinder while the incoming charge is also well distributed by entering the cylinder at the bottom of the stroke on diametrically opposite sides under pressure and being prevented from escaping through the exhaust ports by two deflectors on the piston head. This double system of intake and exhaust creates a high turbulence effect with consequent better flame propagation during the explosion. It further eliminates the "starvation characteristic" of previous two-stroke motors with only one intake position and one deflector which usually left the opposite side of the cylinder with a pocket of inert burned gas. The exhaust ports can be designed to permit of exhaust areas much larger than could be obtained through the largest possible valve opening in the cylinder head of a four-stroke type motor.

Oiling is by force feed from a triple outlet pump, one outlet forcing oil to the main and connecting rod bearings another to a spray in the crank case while the third forces an oil spray into the supercharger.

For development purposes two 25 h.p. engines were first built which immediately proved the two-stroke principle with a supercharger to be feasible. The supercharger was built of two large gears and operated

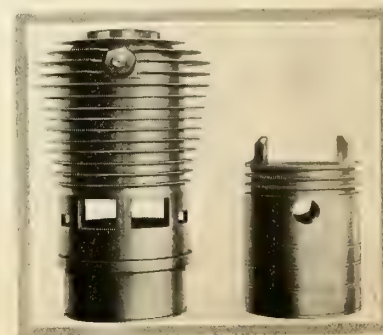


80 h. p. Ajax engine on testing bench.

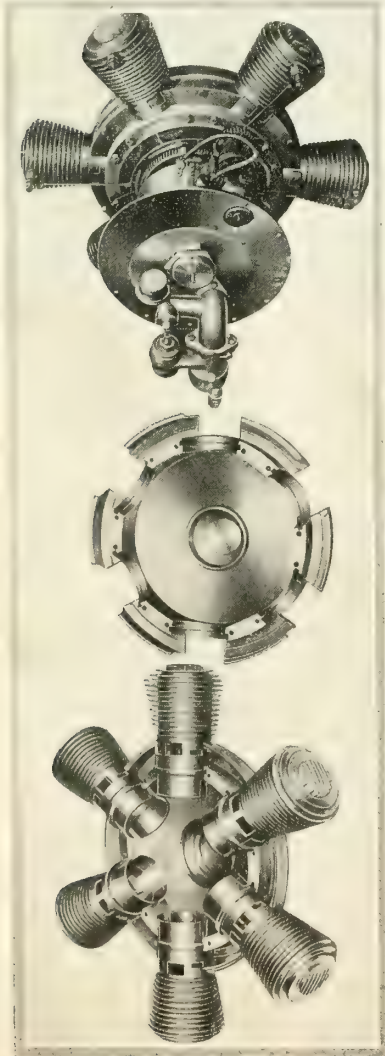
as a separate accessory. Later a 70 h.p. size was constructed containing all improvements suggested by the first two engines, and having a four-vane eccentric rotary supercharger built right into the crankcase. Experiments with this engine led to the design of a 30 h.p. size which was considerably refined and embodying further improvements in the supercharger. Design and construction of these power plants is under the supervision of engineer J. J. Murray.

To submit them to rigid running conditions they have been operated in the snows of Canada and the tropical heat of Florida and California. For several months the 70 h.p. size has been in use to determine the effects of various new features and changes before incorporating them in the design of the 120 h.p. "Atlas".

Specifications on the "Atlas" are as follows: Bore 125 mm (4 7/8"); effective stroke 120 mm (4 3/4"); full stroke 152 mm (6") compression ratio 5.2 to 1; r.p.m. 1,250; weight 260 lbs. Gasoline consumption averages .52 pints per horsepower hour.



120 h. p. "Atlas" cylinder and piston.



Crankcase and cylinder assembly.

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Building the
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REG. U.S. PAT. OFF.

THE "RYAN BROUGHAM"

THE "Ryan Brougham", manufactured by B. F. Mahoney Aircraft Corporation, has wings of conventional I beam construction with built-up wood ribs. The beams are constructed of three laminations of spruce. The ribs are of spruce truss with veneer gussets at all joints. These ribs are specially designed for extreme loads.

The wing is built in one continuous panel attached at each upper longeron joint with a steel fitting and further braced to the fuselage with out-board lift tubes of No. 1025 steel tubing front tube $2\frac{1}{2}$ " diameter, rear tube 2" diameter. These tubes are a streamlined design airfoil that creates lift. The internal bracing of the wing is with wires. There are two systems of internal wires throughout the wing. Ailerons are built of No. 1025 steel tubing especially prepared inside against rust and corrosion. Ailerons are pinned on with one hollow pin, which has a lemite connection on the end for greasing. Two gas tanks of $41\frac{1}{2}$ gallons each are placed in wing on either side of the fuselage.

The fuselage is constructed entirely of steel tubing welded at all joints with bays suitably braced against strain with diagonal members.

The chassis is of split type construction. The axle is heat treated chrome molybdenum steel tubing. The shock absorbing gear is trombone style also of chrome molybdenum, and is pivoted at upper end with junction with the front wing lift strut, and also braced forward to the fuselage and up to the top fuselage and wing joint in suitable manner. Shock absorption is taken on rubber shock absorbing cord.

The tail skid is pivot type chrome molybdenum steel tubing heat treated held at the upper end by shock absorber cord and emergency cable. The tail skid is swivel type but not steerable.

Tail surfaces are constructed of No. 1025 steel tubing throughout and welded in an approved manner, and also prepared internally. The stabilizer is so constructed as to allow nine degrees adjustment in the air from the pilot's seat for variable loads in ship.

The cabin is located under the wing with provision for four passengers and pilot. The cabin is entirely upholstered with blue velour laid over a packing of Balsam Wool. Windows are of sliding type fore and aft. One large door is located on the right side of the fuselage. The pilot's seat is forward of passengers and commands an excellent view through the forward windows. One window on each side of pilot's compartment is adjustable up and down to allow good vision for landing in bad weather. To the rear of the cabin is a baggage compartment constructed for the accommodation of four suitcases.

Two gas tanks are provided of $41\frac{1}{2}$ gallons each which are made of terneplate especially prepared externally against rust and corrosion; also, provisions are made for internal bracing wires passing through the tanks. The oil tank is made of copper, set just inside the cowling on top of the motor



The Ryan Brougham now produced by the B. F. Mahoney Aircraft Corporation.

mount where it is accessible for inspection.

Specifications

Wing span	42 feet
Chord	7 feet
Overall length	30 feet
Overall height	9 feet 10 inches
Tread of wheels	10 feet
Gasoline capacity .....	.83 gallons
Oil capacity	5.2 gallons
Power plant, Wright J-5-C	223 h.p.
Wing area incl. ailerons: 294 square feet	
Fin area	2.5 square feet
Rudder area	9 square feet
Stabilizer area	22 square feet
Elevator area	15.6 square feet
Weight empty	1750 pounds
Gross weight	3100 pounds
Useful load	1350 pounds
Maximum speed	126 miles per hour
Landing speed (full load)	49 m. p. h.
Climb (full load; still air; sea level)	900-1200 feet
Take-off (full load; still air; sea level)	610-660 feet

THE BRUNNER LANDING DEVICE FOR AIRCRAFT

BY the use of a landing device for aircraft invented by Frederick Brunner, a Swiss engineer of long aeronautical experience, it is possible that airplanes or seaplanes may be landed upon a few feet of the rear deck of battleships, cruisers, or passenger liners, from which they could be catapulted into the air again by means of the standard catapult now in use.

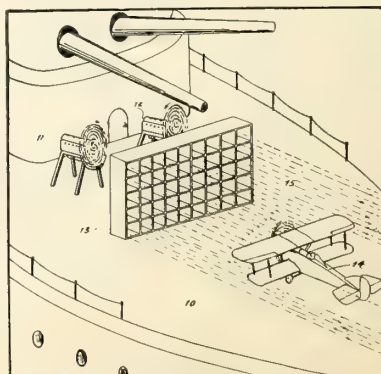
The basic problem that Mr. Brunner believes has been solved is that of supplying

brakework to consume the inertia of the moving mass of a plane in order to bring it to a standstill in a small space. The amount of brakework may vary from 100,000 to 500,000 foot pounds or more. Needless to say, the braking of such a momentum by mechanical means, as used at present on aircraft carriers, transmits considerable stress to the parts of the plane to which the braking force is applied; and this stress increases tremendously if the brake-distance is lessened—that is, when the available landing is short, as it is on the deck of a ship.

The Brunner system provides means for using air, the medium in which the plane is flying, as a braking element, in such a way that an artificial current of air is hurled above and parallel to the landing space, thus providing the air speed which is necessary to keep the plane aloft—even though only a fraction of the airplane's own propelling power is applied, as is done when an airplane is landed against a heavy head wind. This has the advantage of securing an absolutely elastic way of braking, and avoids unusually increased stresses to any part of the plane. It also provides an automatically progressive braking action.

To secure straight air currents that will not disturb the equilibrium of a plane floating in it, a number of parallel flat surfaces, running horizontally and vertically, are placed in front of the blowers or propellers, so that the air will follow a straight path similar to an air current in a wind tunnel. The current of air must have a speed at least equal to the speed of the plane in slowest flight, and it must be of ample height and width to equal the height and wing-spread of the landing plane.

If these conditions are fulfilled by the device when it is built, the system of landing on vessels will be revolutionized. Aerodynamically and mathematically the invention is feasible, but only tests with a full-sized model will demonstrate the practical application of the system. The cost of producing an artificial air current in an open space may be prohibitive. That such a current could be produced, there is no doubt. But if too much horsepower is consumed in that production, then the system will not be practical, at least for commercial use, though there is no doubt that items of cost play but a small part in matters of naval or military necessity.



Proposed aircraft landing device.

Gibbons Co.

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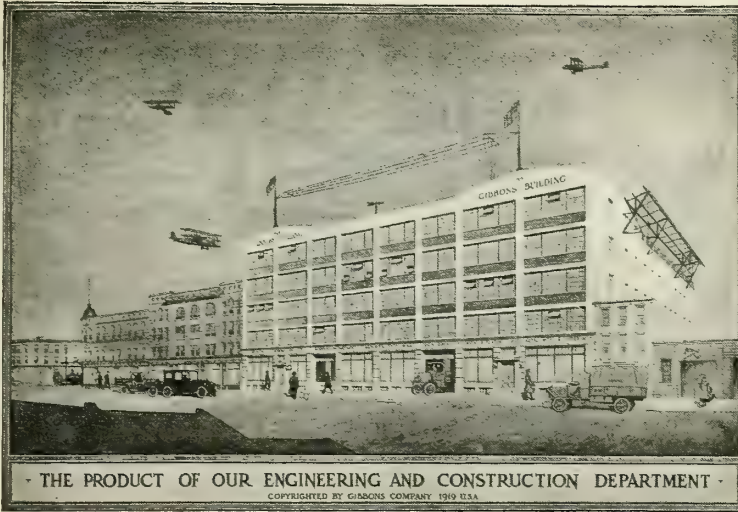
1. The Mechanics and Tradesmen Institute of N. Y., organized 1785.
2. The National Association to promote the future of Aeronautics, Washington, D. C.
3. The City Club, New York.
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FIFTY-EIGHT SUCCESSFUL YEARS

Comments of the Press of the United States, Canada, English, also German, French, Italian, Spanish, etc., papers on the above subject.



From Monthly Review of N. A. A.

"There is need to give the fullest encouragement to aviation and its interests"—Calvin Coolidge.

Good reasons why every patriotic citizen should. Because I am a patriotic citizen; Because I stand for the safety of my home and for the progress of my city, state and nation; Because it speeds up: Air Mail Service, Commercial transportation, National defense, Prosperity in peace, Security in war, Defense against forest fires; Because I favor laws for the control of the world's new and greatest power. To help our country to take the lead in air power and commercial aviation.

Brooklyn, N. Y., Aug. 31, 1927

TO OUR FRIENDS, PATRONS AND THE PUBLIC:

It is with a feeling of justifiable pride that we call attention to the fact that this business is now entering its fifty-ninth year of uninterrupted success.

Established more than half a century ago its founder took for his motto "Service of the minutest detail" and this coupled with moderation in price has been the guiding principle of this firm during all these years.

Our progress has been rapid and only recently we were compelled to enlarge our office, shops and mills and add to our service an engineering department. The plant now has a frontage of 175 feet and a depth of 110 feet.

We are splendidly equipped to construct new buildings in the latest and most modern manner and to remodel and repair old structures.

No matter what your building problems are we can solve them for you. Our prices are most reasonable and we respectfully request an opportunity to bid on any work you may have now or in the future.

Thousands of satisfied customers can attest to the reasonableness of our charges.

All work is done by us with the least possible inconvenience to our patrons.

To our former customers, we earnestly solicit a continuation of their patronage and to prospective clients we only ask an opportunity to serve them whenever the occasion arises.

Respectfully,

Gibbons Co

WESTERN NEWS

CONTACTS

By FRANK E. SAMUELS

FRANK L. ODENBREIT has just purchased a Thunderbird airplane to demonstrate the new Bailey radial motor. After extensive tests on several representative commercial airplanes Mr. Odenbreit chose the Thunderbird for a demonstrating plane. Before entering the Spokane races he is planning to tour the Rocky Mountain and Middle Western states. Delivery will be made to him before the first of September.

IHAD the pleasure of making one of the trial flights of the new Bach Air Yacht De Luxe which is considered by everyone who has inspected it and seen it fly as one of the most beautiful airplanes ever turned out. It is powered by three engines, a Waterman air-cooled 200 h.p. in front and, under each wing, two Kinner 100 h.p. radial engines. The interior of the cabin is finished in a natural gum Haskelite.

LIEUT. JACK FRYE has just returned from a trip east, piloting a new Universal Fokker from the factory in New Jersey which is the first of the ships for the proposed Los Angeles-Fort Worth, Texas, passenger and express route. With him as passengers were Harry Tucker of Santa Monica and B. E. Devere. Mr. Tucker was so impressed with the trip and is such an aviation enthusiast that on his arrival he put in his order with the Aero Corporation of California for a Universal and an Eaglerock. The next day after his arrival here he started in as a pupil of Jack Frye and can be found at the field daily taking flying lessons.

THE Warren School of Aeronautics is enlarging its personnel. Carl S. Clark, for the past seven years civilian head of the Naval Air Station Supply Department of San Diego, has become associated as general manager. Richard D. Hardin, former instructor in aviation for the U. S. Army, designing engineer with the Douglas Company, Ordinance Engineering Corporation and the Packard Motor Car Company, is now director of instruction. O. R. McNeel, T. C. Ayars and H. W. Hunold, all formerly with the Ryan Aircraft Corporation, are now connected with the school as associated instructors. Mr. Clark reports business as greatly improved, students signing up daily for the courses.

IT certainly is a pleasure to visit the Rogers Airport any afternoon and all day on Sundays since the big Ford all-metal plane is making its flights from there. Automobiles are parked three deep the entire length of the field and the passenger planes of the field are flying continuously. Eddie Bellani, Sandy Sandy and Ace Bragunier scarcely know the feeling of ground under their feet and miss lunch many days.



Frank Samuels' 84-year-old aunt goes for a flight with Lieut. Paul Richter.

ITOOK my 84-year old aunt for a "hop" in an Eaglerock the other day with Lieut. Paul Richter of the Aero Corporation of California at the "stick". She had been anxious for some time to experience the thrill of the air and was not disappointed after flying over Los Angeles and the surrounding beaches. "It was a real thrill!" she exclaimed upon landing. "Now I know why our aviators have accomplished so much in the way of distance flights—it is just like mixing business with pleasure."

IN my Contacts of the August issue I believe that I said that Art Goebel was out for the "bacon". Well, he brought it home, and there will be some doings on his return to Clover Field. We all hope that Art don't get sea-sick coming home by boat as that is more of an experience for him than flying up-side-down for five or ten miles.

CAPTAIN WILKINSON, head of the Universal School of Aeronautics, is surprised at the number of replies he has received within ten days from the day his advertisement appeared in AERO DIGEST. One mail brought in sixteen letters and every delivery has brought one or more inquiries. He is satisfied that the young men of the country are anxious to get in the aviation industry and are willing to study to reach their goal.

CAPTAIN MAURICE GRAHAM, one of the many good pilots of the Western Air Express, has become affiliated with the Thunderbird Aircraft Company as a member of the advisory board. Maury has no intention of leaving Western Air Express but has always been anxious to become connected with the Thunderbird Company. The-

odore Woolley informs me that the outlook for the sale of Thunderbird planes is so encouraging that he is obliged to enlarge his quarters and is now on the lookout for a larger factory building.

WA. HAMILTON, one of the directors of the Aero Corporation of California and one of our best motor mechanics, informs me that he is just about to install complete facilities for servicing Wright Whirlwind motors and carry a full line of parts. This will be the first and only Wright Whirlwind service shop on the West Coast. Already a number of pilots from the Naval Base at North Island have stopped in to have minor repairs and adjustments made by Ham, who knows his eggs.

ARUMOR is going around which, if true, will cause the flying field owners lots of jealous thoughts. Frederick (Doc) Whitney and J. B. Alexander, "Waco" live wires, have secured a flying field with a thousand-foot frontage on one of our principal boulevards, where others have tried in vain. Who did it?

THE Müller flying service report a continued increase of business. Sixteen students are now taking instruction from Mr. Miller, three of whom are almost ready to solo and one to take his first cross-country flight to San Diego this week.

WHILE writing this, Mr. Kinner of the Kinner Airplane and Motor Corporation is just taking off in his latest four-place job for Boston to deliver the second plane of his contract to his New England agent. The ship is motored with the latest 100 h.p. 5-cylinder radial air-cooled motor from his shops. His test pilot-mechanic is making the trip with him, checking up the motor for long run trips.

STANLEY SHORT of the Short's School of Aviation has put his new Bach four-place cabin plane in service for long cross-country flights and is so pleased with it that it is almost impossible to get him up in one of his Standards now. The little ship is a beauty and flies far ahead of all expectations.

GEORGE IRVIN, who recently purchased a Thunderbird airplane, has hangar space at the Burdett Airport and is doing all of his flying from that field.

WILLIAM D. WARREN, son of Charles A., is still in the East in the interests of the Warren School. He made quite a visit at the Bureau of Aeronautics, Washington, D. C., and is now visiting the different aircraft manufacturers along his route to the Pacific Coast. By the way I met Edward De Marino, formerly of the Eastman Kodak Co., and he informs me that he is associated with the Warren School as aerial photographer.



The Ten Passenger Air Yacht

BACH AIRCRAFT COMPANY
Clover Field Santa Monica
California



Paul Richter, Lt. Dinger, Maj. Hammond, Clark, Sgt. Ritter, Monte Edwards, Sgt. Fowler, Frank Samuels, Congressman James, Maj. Claggett, A. A. Clark, Buddy, Congressman James is making an inspection of our military aviation bases.

AERO DIGEST DINNER TO HON. FRANK JAMES

THE arrival of Congressman W. Frank James, ranking member of the House Military Affairs Committee, in Los Angeles on what is perhaps the most comprehensive inspection of our military aviation bases by an individual member of Congress, was celebrated by a dinner at the Ambassador Hotel, given in his honor by the publishers of AERO DIGEST and attended by the leaders of the industry on the West Coast.

Dr. Ford A. Carpenter of the Los Angeles Chamber of Commerce presided as toastmaster in his usual inimitable manner. Short talks were made by Major Henry B. Claggett, Commandant of the 9th Corps Area, H. H. Wetzell, vice-president of The Douglas Company, Captain William A. Frye, president of the Long Beach Chapter of the N. A. A., Councilman Hall Hanshue, Lieutenant John Temple, Commanding Officer of Ross Field, Ben Frank, manager of the Ambassador Hotel, and others.

Congressman James' speech on "National Defense" was received with much applause and frequent cheers. He told of his visit to Panama, Hawaii and the northwest coast and stated that in each of the territories visited the number of aircraft available to make the territory safe from invasion was far below what he had expected to find. He laid great stress on the shortage of equipment for the Reserves and complimented the officers of the Air Services for the wonderful work done with the limited material given them to work with.

The Congressman explained that the object of the present congressional visit is to see what are the immediate needs for national defense, in order to draft an intelligent program for the proposed developments.

"I have received information that several foreign planes will land on the shores of America before Congress meets in December," said the Congressman.

"If this is true the average American will realize that the United States is no longer a detached nation, but one which may be attacked by airplanes in the next war.

"I believe this situation is sufficient to warrant the next Congress in formulating plans which will go even further than the so-called five-year program for the development of aeronautics. I say this not because I am an alarmist or a great army man, because I am neither.

"I have never favored a regular army of more than 125,000 men. I do not think the time will come within a few years, if ever, when the United States will have a greater standing army in time of peace than that number.

"Airplanes and more airplanes are needed for national defense," he declared. "The defense of the Pacific Coast, of Hawaii, of the Panama Canal, of every other section of our seaboard depends upon them, in my opinion. I believe that our requirements in this direction exceed the five-year aircraft building program already adopted by Congress."

The Congressman had high praise for the western airports and said that interest in, and enthusiasm for, flying is greater in the West than in the East.

Others who attended the dinner were: H. K. Brasheer, traffic manager, Chamber of Commerce; Donald Douglas, The Douglas Company; Captain Charles Babb, secretary, Southern California Chapter of the N. A. A.; Lieutenant Walter K. Burgess, Commander, Clover Field; Captain P. D. Moulton, medical examiner, Clover Field; Major C. C. Mosely, manager, Western Air Express; Lieutenant Victor Bertranis, government inspector; Lieutenant Leslie P. Arnold, round-the-world flier; S. H. R. Doyle, Commanding Officer, San Diego Naval Air Station; Dr. T. C. Young, representative, California Development Association; D. E. McDanel, president, Professional Pilots' Association; Paul Richter, treasurer, Aero Corporation of California; Major Harmon, Commander, March Field; Major Carlyle, March Field; Captain Walter Parkin, Department of Commerce; Major Charles F. Willard; Hon. Wm. G. Bonelli, president, City Council; Hon. Pierson Hall, City Council; Boyd Shelton, Professional Pilots' Association; Walter A. Ham, lighter-than-air pilot; Ma-

jour Houghten, Commanding Officer, Rockwell Field; Earl S. Daugherty, veteran pilot; B. E. Mortland, Commander, Santa Ana Air Club; Robert J. Pritchard, Western Flying; John Maddux; James Musheete, manager, Pacific AirTransport; Vernon C. Gorst, president, Pacific Air Transport; Lieutenant D. W. Tomlinson, Naval Air Station; Joseph Skidmore; Eddie Belanni, Rogers Airport; Lieutenant Esten B. Koger, Commanding Naval Reserve Air Corps; James Webster, Rogers Airport; A. J. Edwards, Mahoney Aircraft; and F. E. Samuels, western representative, AERO DIGEST.

Congressman James arrived in Los Angeles on August 23rd, landing at Griffith Field where a detailed inspection was made and later flying to Clover Field for the same purpose. He was escorted down San Fernando Valley by a squadron of civilian and military planes headed by a Ford three-motored transport and the Aero Corporation of California's plane piloted by Lieutenant Jack Frye. The congressman's party consisted of Majors Hammond and Claggett, Lieutenant Dinger and Sergeants Fowler and Ritter, A. A. Clark, president of the Visalia Chamber of Commerce and his ten-year old son, Buddy.

Congressman James was elected from the 12th district in Michigan. His home is in Hancock, Michigan. He served two terms as state senator in the Michigan Legislature and, in 1926, was elected to Congress without opposition at the primary or general election. Prior to the 1926 election he had been elected to the 64th and each succeeding Congress.

At the outbreak of the Spanish-American war, he enlisted in the 24th Michigan reserves and saw service in Cuba. Here he became acquainted at first hand with the man in the ranks and in Congress he has championed the cause of the enlisted men. Congressman James piloted through the last Congress the important five-year aviation program appropriating \$150,000,000 for the Army Air Corps. As ranking republican member of the military committee and chairman of the subcommittee on real estate and military housing he will have a large share in guiding the expenditure of this sum.

Answering the
Question that
Thousands
Have Asked.....



How do International Planes "Fly Themselves"



Oleo Landing Gear

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set in type

Motor Completely
Cowed

All Empennage
Controls Enclosed

Radiator Streamlined
in Leading Edge of
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Oversized Wind-
shields

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Octagon Shaped
Haskelite Plywood
Fuselage

Box Beams

Steel and
Duralumin Fittings



IN every plane manufactured by the International Aircraft Corporation is embodied a principle of automatic balance that was perfected and proved early in 1926 by Edwin M. Fisk, chief engineer and designer of the firm.

This principle is not a patented device of any kind. It is simply a combination of skillful engineering, perfection of line and delicacy of balance that makes the plane right itself under any flying conditions *without the aid of the control stick.*

Many pilots, frankly skeptical of our claims, have become enthusiastic International Aircraft boosters after a demonstration flight in "The plane that flies itself."

DEALERS: *International Aircraft manufactures a complete line of aircraft for both sport and commercial purposes. We believe that our product is the best obtainable both in design and workmanship. We solicit your investigation.*

"BUILT TO A STANDARD—NOT TO A PRICE"



INTERNATIONAL Aircraft CORPORATION
LONG BEACH, CALIFORNIA



The Breese-Wilde monoplane of the Varney fleet at Boise Airport.

NORTHWEST AIR NEWS

By F. K. HASKELL

THE "City of Portland," a Waco plane, has been entered by the Rankin Flying School, Portland, Ore., and will be piloted by Tex Rankin, the well known commercial flyer, in the New York to Spokane race.

THE air mail route from Burley, Idaho, 200 miles south of Boise to Pasco, Wash., a distance of 450 miles, will shortly be lighted for night flying according to Frank P. Bell, manager of the northwest division of the Varney air mail line. Revolving beacons of 750,000,000 candle power are to be used and erected at 50-mile intervals. Smaller lights will be alternated with the larger beacons. In addition, an emergency field will be established at each beacon with telephone connections.

JAMES RINEHART, the youthful aviator who recently made a successful flight across the country, has established a beach passenger service between Portland and Clatsop, Ore., Tillamook or Washington beaches. Rinehart is a student at Reed college and has been flying for three years.

VALENTINE GEPHART of Seattle, Wash., will pilot the "City of Olympia" in the transcontinental air derby, New York to Spokane. This ship is a Woodson M6 two-passenger monoplane with a Detroit Air Cat radial air-cooled engine.

DISTRIBUTION of the first complete directory of airports of the Pacific Coast has recently been made by the Standard Oil Company of California.

JUNKING of the present airplanes at Sand Point field and replacing those obsolete types with modern standard planes now in use by the U. S. Air Corps is advocated by Maj. H. C. K. Muhlenberg, who will shortly take charge of the Air Corps Reserve here. First Lieut. Theo. J. Koenig, formerly in charge of the Sand Point field, has been transferred to Crissy Field, San Francisco.

NICK MAMER, Spokane commercial flyer, has been employed by the United States forestry service to map the surrounding country near Sullivan Lake and the Clearwater country. These sections of country are little known and are hard to map, but it is highly desirable that maps be made to aid in fire prevention, and it is agreed that the only way to procure the accurate information is from the air. Howard Flint is the photographer.

A 425-ACRE tract south of Georgetown has been selected for the new Seattle air field. Cost of buying the property and establishment of a Class A field will be \$660,000. A number of sites have been considered by the committee as the Sand Point field has been found entirely inadequate for commercial needs.

THE Bell Line Air Service which will make Portland the hub of an airplane service that will radiate to all sections of the Pacific Northwest will enter an Eagle-rock plane in the San Francisco to Spokane Air derby, September 18th-19th. Headquarters of this company will be located on the new Swan Island field according to President A. T. Shere.



Members of the Idaho Airways Association who flew in the Breese-Wilde monoplane.

Left to right—Governor H. C. Baldridge; Cyril C. Thompson, president, Idaho Airways Association; Victor Shawe, secretary, Idaho State Publicity Board; Ralph E. Thomas, secretary, Idaho State Chamber of Commerce.

C. M. GRANGER, district forester has announced the creation of an airplane patrol of the forests of Oregon and Washington. Two army planes will be used and the cost will be borne by the United States forest service, the States and the private land owners coöperatively. The work will be directed by United States forest service. During several years four or five planes have been used. Capt. W. J. Chamberlain will operate one plane and be stationed at Eugene, Ore., while the other plane will be stationed at Sand Point air field, Seattle. Lieut. L. C. Goldsmith will be the pilot.

WATCH IDAHO!

HIGHWAYS are costly in Idaho, hence an added incentive to encourage airways. The Idaho Airways Association, which was organized a little over a year ago to provide airports for air mail throughout the State, are awake to the importance of air transport and have planned a three-year



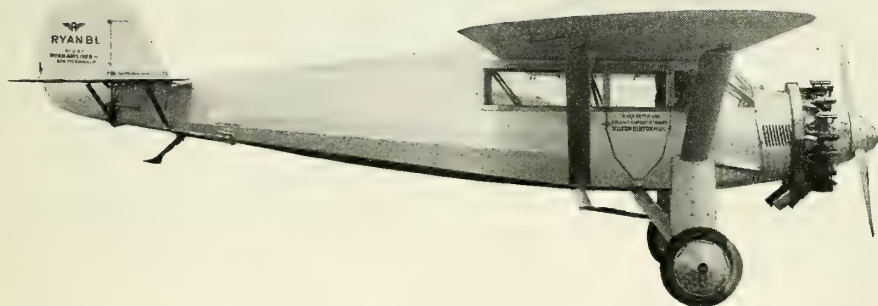
program of airway development in Idaho.

The immediate objective is the construction, marking and mapping of airports and emergency landing fields, the marking of roofs at frequent intervals for several miles on each side of proposed airlines, and to provide a clearing house for dependable information on all questions relating to air navigation in Idaho. The actual construction of airports and emergency landing fields will be done by the state highway bureau and communities along the routes.

In the accompanying map, the heavy black line, route (1), is the route over which the Varney air mail planes operate daily. Route (2) is a part of a nationally proposed route passing through Idaho and connecting Medicine Hat, Canada, with the present transcontinental line at Salt Lake City. Route (9) is on the nationally proposed airway connecting St. Paul with Spokane and Seattle and will be followed by the New York-Spokane Air Derby flyers in September. Numbers given other Idaho routes indicate the probable order of their development.

The Ryan Brougham

Five Place Monoplane



Cruising range 750 miles

Leading a new trend in aeronautical design we have built the Brougham to carry 83 gallons of gasoline, pilot, four passengers, and baggage of five suit cases conveniently stowed out of the way in the rear.

Fully loaded the usual performance of this type monoplane is at once apparent, quick take-off, slow landing speed, high cruising speed, and excellent maneuverability.

Upholstered in silk mohair with the entire cabin insulated with Balsam Wool, owners are finding this newest product of the Mahoney Factory not only unusually efficient but also comfortable.

"The same model that Colonel Lindbergh flew, adapted to passenger carrying."

WITH WRIGHT WHIRLWIND SUPER-INSPECTED J-5-C MOTOR \$9,700

B. F. MAHONEY AIRCRAFT CORP.

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THE FALCON FLYERS

THE "Falcon Flyers," a California organization for the encouragement of civil aviation, was recently formed with Edward H. Sharpe, president. R. E. Fisher, vice-president of the Pacific Gas and Electric Company of San Francisco, was elected vice-president; L. G. Peterson of Los Angeles, secretary; Fred T. Beaty; H. Allan Sullivan of the Douglas Company, Santa Monica, Wm. Henry and H. B. Klingensmith, members of the executive committee of the board of governors.

The advisory council members are: William May Garland, chairman; A. G. Arnoll, E. A. Dickson, Superior Judge W. C. Doran, G. G. Young, Lt. Gov. Buron Fitts, Harry Chandler, Donald W. Douglas, H. C. Eller, U. S. District Attorney S. W. McNabb, Louis B. Mayer, Tracy Miller of Brawley, Maj. C. C. Mosely, D. W. Pontius, Fred S. Shoup, State Senator Ralph Swing, George E. Buxton, of Douglas, Ariz., H. B. Watkins, of Phoenix, Ariz., and Louis B. Whitney of Phoenix.

The board of governors and founders is composed of L. W. Brown, L. J. Burrud, Paul W. Clark, Chief of Police James Davis, George E. Gaylord, R. E. Kelley, H. B. Klingensmith, Ralph M. Kern, Albert K. Lucas, George W. Rochester, Ben H. Read, U. S. Marshal A. Sittel, Norman H. Sloan of San Francisco, U. S. Land Office Registrar B. B. Smith, R. E. Wedeking, Charles Dillon, R. T. Leonards, William Henry and John M. Lyle.

The organization plans to establish flying



A. J. Edwards, sales mgr. of Mahoney Co.

fields throughout the Southwest. They also plan to establish the first flying country club and have taken an option on 2,600 acres of land in the San Joaquin valley for this purpose.

EDWARDS SALES MGR. OF MAHONEY AIRCRAFT

THE story is being told that A. J. Edwards, now sales director of the B. F. Mahoney Aircraft Corporation, builders of the "Spirit of St. Louis", took off from the Muskogee, Oklahoma, air field one morning

in 1925 intent upon eating lunch in Oklahoma City with a prominent air officer. After flying steadily for over an hour he happened to glance back and was astonished to see Muskogee still just a few miles behind him.

Hurriedly checking his bearings he discovered to his consternation that he was not only getting nowhere but was actually losing ground even though the motor was running nearly full throttle. Needless to say the lunch was postponed—but the moral of the story stayed with him. "It depends upon how you are headed whether you go anywhere."

Everything about A. J. Edwards indicates that he is "going somewhere". This time the "blow" is all in his favor for he has finally given up the automobile industry for aviation. The many successful automobile enterprises he built up in the West and Midwest will no doubt continue but the enthusiasm and determination of the man himself is now definitely allied with aviation after following it as a hobby since the days of Lincoln Beechey.

At one time Edwards held every dirt track and road race record out of Portland, Oregon, then the center of automobile racing in the Northwest. He was also one of the first to establish a non-stop automobile record by driving a popular light four, seven days and nights on the highways of the Pacific.

Speaking of aviation, Mr. Edwards is confident that this newest industry will not only parallel the automobile industry but even now exceeds its possibilities.

THE LARGEST CIVILIAN FLYING SCHOOL IN AMERICA

Complete Course \$250.00

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Mechanics of Flight
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YOU MUST WIN YOUR WINGS!

You cannot have them given you!—You must KNOW and PROVE your knowledge before you are accepted in any branch of Aviation.

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KINNER

The New Kinner 5 Cylinder Radial Air-cooled 100 h.p. motor is now in quantity production and is available to the trade. This motor installed in a Kinner Airster outperforms all 3 place commercial planes up to 100 h.p.

INSTALLED IN YOUR -90 or 100 h.p. plane will give you super performance

On August 18th, Lee Brusse, piloting a Kinner Airster, powered with the new Kinner 100 h.p., five cylinder radial air-cooled motor, flying on wide open throttle and carrying a load of 567 lbs., including pilot, passenger and 27½ gallons of gas, covered a distance of 180 miles, attaining an altitude of 14,000 ft.

Time 2 hours, 5 minutes. Fuel consumption 11 gallons gas, 1 pint oil.

Price of motor \$1,675 F. O. B., Glendale. Delivery date on request.

Write for additional information

Kinner Airplane and Motor Corporation
GLENDALE, CALIFORNIA

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Offering a course in aeronautics revised to cover all requirements of the new air commerce regulations assuring the student of the necessary qualifications to pass the practical and theoretical examinations for pilots license.

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UNIVERSAL SCHOOL OF AERONAUTICS

THE Universal correspondence course of instruction has been specially prepared under the supervision of Captain T. Cameron Wilkinson, R. A. F. Naval instructor in aerial navigation, meteorology and other branches of aviation, and graded to meet the scholastic status of each student. Bearing in mind that some students have not had the advantage of even a high school education, problems that require for their solution a knowledge of higher mathematics have been treated in such a manner that a student with an ordinary school education will understand.

The complete course in aeronautics is divided into three: Courses 1 and 2, designed to give the beginner a thorough fundamental ground work upon which to build his experience, and Course 3 covering the more advanced subjects.

Students enrolled with the Universal School of Aeronautics are given a Special Service Certificate which entitles them to free information covering any branch of aeronautics, landing field data, airways, etc.

PHILLIPS PETROLEUM USED IN "WOOLAROC"

THE Phillips Petroleum used in the "Woolaroc" plane in which Art Goebel won the Dole Hawaiian Flight prize, is a light weight fuel, weighing only 5.66 pounds per gallon. Some of the outstanding features of this gasoline are: high anti-knock



Captain T. Cameron Wilkinson

value, low vapor pressure, freedom from vapor lock at high altitudes and reduced pressures, great power output (35 to 50 more r.p.m. than in most compression engines).

It is not a doped or blended fuel, but is a scientific product which has been in the process of development for some years and has been under actual flight test in all types of engines under many conditions. It starts and accelerates readily without choking at temperatures considerably below zero.

SUPER RHONE ENGINE DEALERSHIPS

IN announcing their new model Z-2 now in production in their Houston, Texas, shops, Tips & Smith, Inc., manufacturers of this static radial air-cooled engine, also announce a change in their selling policy whereby the exclusive sales rights heretofore held by the Super Rhone Engine & Flying Corp. are canceled except for the South Texas territory.

A system of dealerships with restricted territory is being formulated. These dealerships are now being established and a list of same will be available shortly. In this manner it is hoped that purchasers and operators of engines can be better cared for in the matter of service and repair, as well as being afforded more prompt deliveries than has been possible in the past.

The present production contemplates a schedule of 100 engines for the current season. Changes have been made increasing the life of the engine, giving a smoother and more satisfactory performance for the average operator. Major among the changes was the installation of a Zenith carburetor, which eliminated the double lever control previously necessary. The original bronzed-faced steel thrust junction running on two annular bearings on the crankshaft throw has been replaced by a thrust junction of duralumin which is forged and heat-treated and aged before machining. This change reduced the weight of the engine by eleven pounds.

Dedicated to the Discriminating Buyer



Designed by Lloyd Stearman

STEARMAN Airplanes are built to meet the requirements of the more exacting purchaser and to furnish the highest possible grade of air transportation at a minimum cost per flying hour.

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"FOR SAFE DESCENT"

100% Manually Operated

No Rubber Bands—No Springs

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**Made of Both Silk and Cotton Specification
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Discounts on Quantity Orders**

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Learn Aviation at the University of the Air

The First Adequately Equipped Aviation School in America

OUR COURSES INCLUDE

Engineering
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We Train You for the Highest Type of Pilot

We can not only make you a skillful flyer, but also can give you the practical and theoretical training in engine and plane mechanics and rigging, as well as the study of meteorology and air navigation that you **MUST** have today to pass the government examination for transport pilot.

We Teach You the New Highly-Paid Trades That Are a Part of Aviation

For every man in the air there are ten to fifteen today engaged in engineering, designing and building planes, serving them, overhauling and inspecting.

In the Warren School of Aeronautics you get practical training in **EVERY** one of these branches in our own modern factory.

Invest Some Money in Yourself

Draw the dividends in your weekly pay envelope—in new and fascinating work. Make the years ahead hold something for you beside a bare living earned at uninteresting jobs. We make it easy for you to do this.

We are placing our students in local aircraft industries as rapidly as they are qualified! There are over 20 fields and 10 factories in this district.

Study Aviation at Home

The most complete and comprehensive home study course in Aeronautical Engineering and Design is now available.

The cost of the home study course will be deducted from your tuition when you enter the school to complete your practical training. *You can start at home now.*

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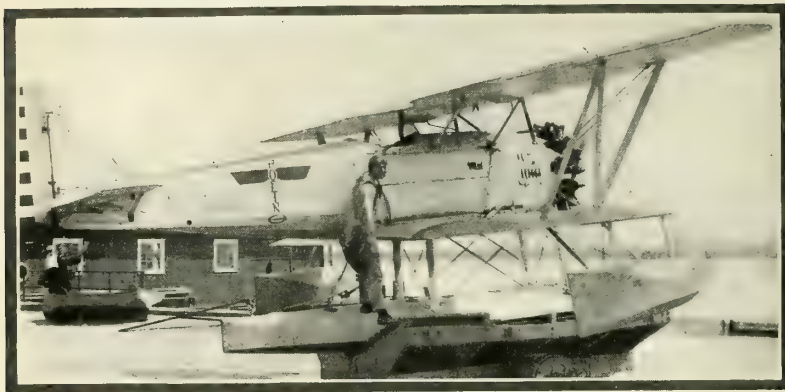
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NEWS OF THE AIR SERVICES



Wide World.

Lt. Comdr. Gavin tests latest type Boeing navy pursuit plane with P & W Wasp engine.

NAVY PILOTS BREAK SEAPLANE RECORDS

LIEUTENANTS BRYON J. CONNELL and Herbert C. Rodd, Navy airmen stationed at North Island Naval Air Station, San Diego, Calif., on August 16th broke the world's seaplane records for distance and duration. In a PN-10, weighing at the time of take-off about 11 tons, Connell and Rodd, with aviation machinist mate Comar Vincent, circled a 25 kilometer course 101 times, or about 1,568 miles, in 20 hours, 45 minutes, 40 seconds. The former duration record for Class C2 (seaplanes) carrying 500 kilograms useful load was established by Fritz Loose, Germany, on March 29, 1927, when he flew 1,057.6 miles in 14 hours, 8 minutes, 2 seconds.

Lieutenant Connell set another world's record in the PN-10 seaplane on August 18th, carrying the greatest payload by a seaplane at an altitude of 2,000 meters (6,561.7 ft.). Carrying a sand load of 7,726 pounds, Lieutenant Connell went to a height of 6,975 feet, breaking the record held by A. Passalova of Italy who carried 6,614 pounds to 2,000 meters on December 8th, 1926.

NEW GAS CELLS FOR THE "LOS ANGELES"

THE first of seven new gas cells for the naval airship *Los Angeles*, now being manufactured by the Goodyear Tire & Rubber Company at Akron, Ohio, were completed and delivered to Lakehurst Air Station in August. The other cells will be ready for installation before January, 1928.

An experimental airplane landing and releasing device for the *Los Angeles* is now under construction at Goodyear for the Navy Bureau of Aeronautics, and tests may be made during the early fall.

Two "TC" type airship envelopes, and an all-metal airship car for a small experimental dirigible, are now under way in the Goodyear factories for the U. S. Army Air Corps, and will be shipped to Scott Field, Belleville, Ill., when completed.

PARIS AIR PROGRAM FOR AMERICAN LEGION

L'ASSOCIATION des Officiers de Reserve Aeronautique, composed largely of French Officers who served in the Air Service during the World War, have invited the American Legion to attend an aeronautical review and exhibition at Villacoublay, the French experimental aviation center, on September 21st.

On September 23rd, the Legion are to visit Le Bourget Airport as guests of the commercial aviation companies.

They are also invited to inspect the Brequet factory, adjoining Villacoublay Field, and the French aviation school at Versailles.

Transportation will be furnished at 2 p. m. on September 21st and 23rd at the Convention headquarters of Paris Post No. 1 of the American Legion in the Cours-la-Reine.

MacNIDER COMPLETES 11,905-MILE AIR TOUR

ASSISTANT Secretary of War, Hanford MacNider, has just concluded a 11,905-mile air tour of inspection of summer camps. With Captain R. G. Ervin of the Army Air Corps as pilot, MacNider left Washington on July 4th and finished his trip on August 6th, during which time they spent 103 hours, 35 minutes in the air.

CHAMPION REACHED 38,559 FT. ALTITUDE

LIEUTENANT CARLETON C. CHAMPION, U.S.N., reached an official altitude of 38,559 feet on July 25th in his attempt to surpass the world's altitude record, although instruments that were smashed indicated a height of 47,000 feet, over 7,000 feet above the record.

His barograph, although slightly damaged by fire and jars when he was forced to descend after two cylinder heads of the motor were blown, was turned over to the Bureau of Standards for calibration. The bureau, after tests, announced that the instrument had recorded a height of 38,559 feet, and it could not be ascertained whether it had stopped functioning at that height from vibration of the plane.

29th DIVISION, MD. N.G. TRAINING CAMP

THE 29th Division, Air Corps, Maryland National Guard, whose headquarters are at Logan Field, Baltimore, Md., held their annual summer training camp at Shepherd Field, Martinsburg, W. Va., during the last two weeks of August.

In addition to the regular training flights, combat maneuvers, reconnaissance, artillery and photographic missions, an aerial pageant was put on. Over ten thousand spectators viewed the formation and stunt flying, speed races and parachute jumping. Major General Anton Stephan, commander of the 29th Division, reviewed the exhibition and was enthusiastic over the work of the Guardsmen. The Berkeley Aviation Club, sponsors of the camp, arranged many entertainments for the airmen during their stay.

The official personnel of the squadron follows: Major W. D. Tipton, commanding officer; Captain Black, senior instructor, Army Air Corps; Major Burwell; Captain Townsend Scott, adjutant; Captains Masson, Cobb, Hooper, Hardman; Lieutenants Bohlman, Bourne, Stewart, Snyder, Whitescarcer, McAvoy, Melant, Rogers, Gorman, Patterson, Erdwan, Travers, Dice, McCauley. Lieut. R. L. Brookings and Sergeant Charles Langhammer of Bolling Field were instructors.



Officers of the 29th Division, Md. Nat'l Guard at Shepherd Field, Martinsburg, W. Va.



The "CORSAIR"

THIS new Vought creation is an outstanding achievement in the development of high performance military aircraft. Throughout it evidences a high order of aero-dynamic and mechanical merit.

The "CORSAIR" meets the latest demands of the U. S. Navy for high performance Naval Aircraft.

It will out-fly and out-maneuver, at high altitudes, all other standard service type Single-Seater Fighters, and Two-Seater, Landplanes and Seaplanes.

The "CORSAIR" is now in production and deliveries will shortly be made to the U. S. Naval Air Service for UO replacement.

The "Corsair" is designed around the P. & W. "Wasp" engine

CHANCE VOUGHT CORPORATION
LONG ISLAND CITY, NEW YORK

ARMY AND NAVY AIR SERVICE ORDERS

ARMY AIR CORPS ORDERS

THE following Army Air Corps orders have been issued as of the date indicated in brackets:

- Andrew, 2d Lt. James W., relieved from duty as student in Advanced Flying School, Kelly Field, Texas; ordered to report to commandant for duty. (Aug. 3)
- Andrews, 1st Lt. William V., relieved from detail as instructor of Tennessee National Guard, Nashville; ordered to Langley Field, Va. (July 29)
- Annis, 2d Lt. Jerome Carlock, Reserve, ordered to active duty for training, reporting at San Antonio Air Intermediate Depot, Texas. (July 27)
- Barker, 2d Lt. Fowler Wesley, Reserve, ordered to duty for training at Detroit, Mich. (July 27)
- Barcus, 2d Lt. Glenn O., Selfridge Field, Mt. Clemens, Mich., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Baxter, 2d Lt. Henry R., relieved from duty as student in Advanced Flying School, Kelly Field, Texas, to Langley Field, Va. (Aug. 3)
- Baxter, 2d Lt. Thurston H., Selfridge Field, Mt. Clemens, Mich., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Benson, 1st Lt. Joseph W., relieved from assignment and duty at Scott Field, Ill.; ordered to duty at Brooks Field, Tex. (Aug. 7)
- Berman, 2d Lt. Sydney David, Reserve, relieved from further active duty at Brooks Field, Tex. (Aug. 3)
- Berry, 2d Lt. John Clayton, Reserve, Honolulu, ordered to active duty in Hawaiian Department for training. (Aug. 15)
- Blessley, 1st Lt. Rowland C. W., relieved from 11th School Group, Brooks Field, Tex., and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)
- Boligano, 2d Lt. John Frank, Reserve, ordered to active duty, reporting at Scott Field, Ill., for training. (Aug. 10)
- Bone, 2d Lt. Norfleet Giddings, Reserve, ordered to active duty, reporting at Fort Sam Houston, Tex., for training. (Aug. 3)
- Borden, 2d Lt. David Mering, Reserve, ordered to active duty, Langley Field, Va. (Aug. 10)
- Boyden, 2d Lt. Harvey L. (Cavalry), relieved from duty as student in Advanced Flying School, Kelly Field, Texas; ordered to report to commandant for duty. (Aug. 3)
- Boyle, 2d Lt. Conrad L. (Field Artillery), relieved from present duties at Fort Sam Houston, Tex.; assigned to 15th Field Artillery, same post. (Aug. 12)
- Bowman, 2d Lt. Edward Hastings, Reserve, ordered to active duty for training at Wright Field, Dayton, Ohio. (July 29)
- Boyman, 2d Lt. John W., Mitchell Field, L. I., N. Y., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Brant, Maj. Gerald C., relieved from assignment in office of Assistant Secretary of War; ordered to Crissy Field, Presidio of San Francisco, Cal. (Aug. 1)
- Buie, 1st Lt. Walter D., relieved from duty at Ballloon and Airship School, Scott Field, Ill.; ordered to report to commanding officer, same post, for duty. (Aug. 2)
- Burwell, 2d Lt. James B., relieved from duty as student in Advanced Flying School, Kelly Field, Tex., ordered to report to commandant for duty. (Aug. 3)
- Carlson, 2d Lt. Oscar F., relieved from duty as student in Advanced Flying School, Kelly Field, Tex., ordered to report to commandant for duty. (Aug. 3)
- Cartier, 2d Lt. Lionel Rosario, Reserve, ordered to active duty for training, reporting at Wright Field, Dayton, Ohio. (July 27)
- Cerruti, Capt. Frank Anthony, Reserve, ordered to duty for training at Detroit, Mich. (July 27)
- Clark, 1st Lt. Harold L., relieved from duty at Fairfield, Ohio; ordered to Kelly Field, Tex. (July 26)
- Clarke, 1st Lt. William B., relieved from assignment at Kelly Field, Tex., ordered to March Field, Calif. (Aug. 16)
- Cook, Maj. Philip Page, Reserve, ordered to active duty for training, reporting at San Antonio Air Intermediate Depot, Texas. (July 27)
- Cook, 2d Lt. Warren Stewart, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)
- Covington, 2d Lt. Duane Monroe, Reserve, ordered relieved from further active duty at Brooks Field, Tex. (Aug. 3)
- Cris, Capt. Roy E., relieved from duty with Second Division, Fort Sam Houston, Tex., assigned to First Cavalry Division, Fort Bliss, Tex. (Aug. 3)
- Craw, 2d Lt. Demas T. (Infantry), Selfridge Field, Mt. Clemens, Mich., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Crosswell, 2nd Lt. William, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)
- Cummings, 1st Lt. Charles M., relieved from assignment at Kelly Field, Tex., detailed as instructor, Ohio National Guard; station at Cleveland, Ohio. (Aug. 2)
- Danforth, Cpl. Charles H., detailed as member of court of inquiry appointed to meet at Fourth Corps Area. (July 29)
- Davies, 2d Lt. Ward I., Langley Field, Hampton, Va., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Davidson, 1st Lt. Howard G., relieved from duty at Ballloon and Airship School, Scott Field, Ill.; ordered to report to commanding officer, same post, for duty. (Aug. 2)
- Dean, 2d Lt. Richard H., relieved from duty as student in Advanced Flying School, Kelly Field, Tex., ordered to report to commandant for duty. (Aug. 3)
- Diamond, 1st Lt. Aubrey Fred, Reserve, ordered to active duty for training, reporting to Middletown Air Intermediate Depot, Pa. (Aug. 10)
- Dixon, 2d Lt. George Martin, Reserve, ordered relieved from further active duty at Brooks Field, Texas. (July 29)
- DuVall, 2d Lt. Donald William, Reserve, ordered to active duty for training, reporting at San Antonio Air Intermediate Depot, Texas. (July 27)
- Ent, 2d Lt. Uzal, relieved from assignment at Scott Field, Ill.; ordered to Langley Field, Hampton, Va. (Aug. 2)
- Eppright, 2d Lt. George J., relieved from duty as student in Advanced Flying School, Kelly Field, Tex., ordered to report to commandant for duty. (Aug. 3)
- Etheridge, 1st Lt. Asa J., promoted to captain. (Aug. 10)
- Finch, 1st Lt. George Griffin Finch, Reserve, relieved from assignment at Selfridge Field, Mich.; relieved from further active duty. (Aug. 10)
- Fisher, 2d Lt. Henry G., relieved from duty at Ballloon and Airship School, Scott Field, Ill.; ordered to report to commanding officer, same post, for duty. (Aug. 2)
- Forsyth, 1st Lt. Andrew E. (Cavalry), relieved from detail in Air Corps, assigned to 4th Cavalry, Fort Meade, South Dakota. (Aug. 7)
- Gayton, 2d Lt. Frederick Leon, Reserve, ordered to duty for training at Detroit, Mich. (July 27)
- George, 1st Lt. Harold H., promoted to Captain. (Aug. 16)
- Gilley, 2d Lt. Richard H., Third Attack Group, Fort Crockett, Texas, to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Glascok, 1st Lt. John R., relieved from Advanced Flying School, Kelly Field, Tex., and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)
- Greulich, Capt. Frank Constantine, Spec. Reserve, ordered to report to Chief of Air Corps for training. (Aug. 10)
- Griffin, 2d Lt. Townsend, promoted to 1st Lt. (Aug. 10)
- Griswold, Maj. Clifford Burnham, Reserve, ordered to active duty for training, reporting at Mitchell Field, L. I., N. Y. (July 27)
- Haddon, 2d Lt. Floyd Grier, ordered to active duty, reporting to Chief of Air Corps for training. (July 27)
- Harmet, Capt. Falk, Reserve, ordered to active duty at Wright Field, Dayton, Ohio, for training. (July 26)
- Harms, Maj. Henry W., detailed as representative of Air Corps on War Department technical committee, vice Capt. Walter F. Kraus. (Aug. 9)
- Harris, 2d Lt. Samuel R., Jr., Third Attack Group, Fort Crockett, Texas, to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Haydon, 2d Lt. Frank Pratt, Reserve, ordered to active duty for training, reporting at Fairfield Air Intermediate Depot. (July 27)
- Hayes, 2d Lt. Wilbur Mead, Reserve, ordered relieved from further active duty at Brooks Field, Texas. (July 29)
- Hazen, 2d Lt. Ronald McKean, Reserve, ordered to active duty for training, reporting at Wright Field, Dayton, Ohio. (July 27)
- Holterman, 1st Lt. Edward Henry, Reserve, ordered to active duty, reporting at Langley Field, Va., for training. (Aug. 13)
- Holcomb, 2d Lt. Leslie P., relieved from duty at Scott Field, Ill.; ordered to Langley Field, Va. (Aug. 2)
- Holterman, 1st Lt. Henry, Reserve, relieved from further duty. (Aug. 16)
- Huffman, 1st Lt. William Edward, Reserve, ordered to active duty, reporting at Scott Field, Ill., for training. (Aug. 10)
- Hunter, 1st Lt. Frank O'D., promoted to Captain. (Aug. 16)
- Inskip, 2d Lt. Harry Vincent, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)
- Irvin, 2d Lt. Frank G. (Infantry), Selfridge Field, Mt. Clemens, Mich., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Johnson, 2d Lt. Alfred H., Langley Field Hampton, Va., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Jones, Capt. Bradley, Spec. Reserve, ordered to active duty, reporting to Chief of Air Corps for training. (July 27)
- Kennedy, 1st Lt. Emile T., assigned to duty at Langley Field, Va., upon completion of present tour of foreign service. (Aug. 3)
- Kidwell, 2d Lt. John P., relieved from duty at Ballloon and Airship School, Scott Field, Ill.; ordered to report to commanding officer, same post, for duty. (Aug. 2)
- Klein, 2d Lt. Frank D., Selfridge Field, Mt. Clemens, Mich., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Kyle, 2d Lt. Reuben, Jr., Maxwell Field, Montgomery, Ala., to Advanced Flying School, Kelly Field Texas. (Aug. 3)
- Landsberg, 2d Lt. Julius Theodore, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)
- Larkin, 1st Lt. George Reece, Reserve, ordered to active duty for training at Fairfield Air Intermediate Depot, Ohio. (Aug. 10)
- Lawrence, 2d Lt. Guy Eastman, ordered to active duty, reporting at Chanute Field, Rantoul, Ill., for training. (July 27)
- Lewis, 2d Lt. Wofford Eugene, Reserve, ordered to active duty, reporting at Marshall Field, Fort Richey, Kans. (July 25)
- Lichtenberger, 2d Lt. Herbert C., Langley Field, Hampton, Va., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Lynch 1st Lt. Edmund C., relieved from assignment as student, Advanced Flying School, Kelly Field, Tex.; ordered to Brooks Field, Tex. (July 29)
- Lyons, 2d Lt. Paul Morris, Reserve, ordered to active duty reporting at Wright Field, Dayton, Ohio, for training. (Aug. 9)
- McCollister, Capt. Earl Hamilton, Reserve, ordered to active duty for training at Rockwell Air Intermediate Depot, Coronado, Calif. (July 27)
- McCullough, Capt. Charles Edmund, Reserve, ordered to active duty, reporting to Langley Field, Va. (Aug. 10)
- McEntire, 1st Lt. George W., promoted to Captain. (Aug. 3)
- McKinnon, 1st Lt. Morton H., relieved from Brooks Field, Tex., and will proceed to March Field, Riverside, Calif. for duty. (Aug. 17)
- Magee, 1st Lt. Richard H., orders assigning him to duty at Chanute Field, Ill.; revoked. (Aug. 9)
- Mallory, 2d Lt. Halsey LeDue, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)
- Martin, 2d Lt. William Stanton, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)
- Milling, Maj. Thomas DeW., now on duty in office of Chief of Air Corps, detailed as member of Aeronautical Board, vice Capt. Robert Oldys, relieved. (Aug. 13)
- Minter, 1st Lt. Hugh C., relieved from 46th School Squadron, Brooks Field, Tex., and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)
- Morris, 1st Lt. William C.; relieved from assignment at Love Field, Dallas, Tex.; ordered to duty at Langley Field, Va. (Aug. 2)
- Morrow, Capt. George L. (Infantry), relieved from detail to Air Corps and further station at Fort Sam Houston, Tex., assigned to 2d Division, Fort D. A. Russell, Wyo. (Aug. 5)
- Muhlenberg, Maj. H. C. Kress, Seattle, Wash., ordered to Sand Point airdrome. (July 29)
- Murphy, Capt. Robert T. Lee, Reserve, ordered to active duty at Wright Field, Dayton, Ohio, for training. (July 26)
- Nelson, 2d Lt. Morris R., Selfridge Field, Mt. Clemens, Mich., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Norwood, 1st Lt. Donald W., relieved from 88th Observation Squadron, Brooks Field, Texas, and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)
- Olsen, 2d Lt. Raymond Charles, Reserve, ordered relieved from further active duty at Brooks Field, Texas. (July 29)
- Pitts, 1st Lt. Younger A., relieved from 40th School Squadron, Kelly Field, Tex., and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)
- Pratt, 2d Lt. James G. (Cavalry), Pope Field, Fort Bragg, N. C., to Advanced Flying School, Kelly Field, Texas. (Aug. 3)
- Prudhomme, 2d Lt. Shelton E., relieved from duty as student in Advanced Flying School, Kelly Field, Tex., ordered to report to commandant for duty. (Aug. 3)
- Quinn, Capt. Orlo H., relieved from Advanced Flying School, Kelly Field, Tex., and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)
- Rich, 2d Lt. Benjamin Harrison, Reserve, ordered to active duty for training, reporting at Fairfield Air Intermediate Depot, Fairfield, Ohio. (July 27)
- Rouch, 2d Lt. Lester M., relieved from duty at Ballloon and Airship School, Scott Field, Ill.; ordered to report to commanding officer, same post, for duty. (Aug. 2)
- Ross, 2d Lt. Charles A., relieved from duty as student in Advanced Flying School, Kelly Field, Tex., ordered to report to commandant for duty. (Aug. 3)
- Rubner, 1st Lt. Michael Maxime, Reserve, orders revoked. (Aug. 7)
- Sauer, 2d Lt. Howard Augustus, Reserve, ordered to Buffalo, N. Y., for training. (Aug. 10)
- Schartle, 2d Lt. Ronald Newman, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)
- Scheirer, 1st Lt. James Emory, Reserve, ordered to active duty for training, reporting to Fairfield Air Intermediate Depot, Fairfield, Ohio. (July 27)
- Schellhardt, 2d Lt. Morris Adams, Reserve, ordered to active duty at Duncan Field, San Antonio, Tex., for training. (Aug. 10)
- Schofield, 1st Lt. Earl S., promoted to captain. (Aug. 10)

(Continued on page 324)



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(Continued from page 322)

Schramm, 1st Lt. Ned., relieved from Advanced Flying School, Kelly Field, Tex., and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)

Schwobeda, 2d Lt. Leslie Harry, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)

Scott, 2d Lt. Kirk Hamilton, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)

Selway, 2d Lt. Robert R., Jr., relieved from duty at Ballloon and Airship School, Scott Field, Ill.; ordered to report to commanding officer, same post, for duty. (Aug. 2)

Shea, 1st Lt. Augustine F., relieved from duty as student in Advance Flying School, Kelly Field, Texas; ordered to report to commandant for duty. (Aug. 3)

Shelley, 2d Lt. Perry Louis, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)

Simonin, 1st Lt. Arthur P., promoted to Captain. (Aug. 16)

Sims, 2d Lt. Turner A., Jr., relieved from duty as student in Advanced Flying School, Kelly Field, Tex., ordered to report to commandant for duty. (Aug. 3)

Sneed, Maj. Albert L., relieved from duty at Kelly Field, Tex., assigned to Rockwell Air Intermediate Depot, Crissy Field, Presidio of San Francisco. (July 25)

Straker, 1st Lt. George Varley, Reserve, ordered to active duty for training at Mitchell Field, L. I., N. Y. (Aug. 2)

Templeton, 2d Lt., Frederic Eastland, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)

Thery, 2d Lt. Manning E., Third Attack Group, Fort Crockett, Texas, to Advanced Flying School, Kelly Field, Texas. (Aug. 3)

Toother, 1st Lt. Bernard J., relieved from Brooks Field, Texas, and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)

Twining, 1st Lt. Nathan F., relieved from Brook Field, Texas, and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)

Waller, 2d Lt. Ivan Raymond, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)

Warner, Capt. David Morton, Spec. Reserve, ordered to active duty, reporting at Chanute Field, Rantoul, Ill., for training. (July 27)

Whately, 2d Lt. Ben Jett, Reserve, relieved from further active duty at Brooks Field, Tex. (July 29)

Wheeler, Capt. Chilion F., relieved from assignment at Bolling Field, D. C., ordered to report for duty in office of Chief of Air Corps. (Aug. 16)

Wheeler, 2d Lt. Clarence D., relieved from duty as student in Advanced Flying School, Kelly Field, Tex., ordered to report to commandant for duty. (Aug. 3)

Whitson, 2d Lt. Wallace E., relieved from Brooks Field, Texas, and will proceed to March Field, Riverside, Calif., for duty. (Aug. 17)

Williams, 2d Lt. William Pearce, Reserve, ordered to active duty for training, reporting at Clover Field, Santa Monica, Calif. (July 27)

Wilson, Capt. Arthur, Reserve, ordered to active duty for training, reporting at Mitchell Field, L. I., N. Y. (Aug. 2)

Wittcop, 2d Lt. Hilbert M., promoted to 1st Lt. (Aug. 3)

Wood, 1st Lt. Charles Chesney, Reserve, ordered to active duty, reporting at Langley Field, Va., for training. (Aug. 10)

Wright, Capt. Frank W., now on duty in office of Chief of Air Corps, assigned to additional duties at Bolling Field. (July 26)

NAVY AIR SERVICE ORDERS

THE following Navy air orders have been issued as of the dates indicated in brackets:

Arnold, Lt. (j.g.) Ralph J., detached U. S. Brazos, to c.f.o. U. S. S. Lexington. (July 15)

Black, Lt. (j.g.) Max I., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (July 29)

Brown, Ens. John G., detached U. S. S. Nevada; to c.f.o. U. S. S. Saratoga. (Aug. 3)

Burnside, Ens. John L., Jr., detached U. S. S. Oklahoma; to c.f.o. U. S. S. Saratoga. (July 25)

Busen, Ens. Francis L., detached U. S. S. Nevada; to c.f.o. U. S. S. Lexington. (Aug. 2)

Conley, Lt. Delbert L., detached Nav. Air Sta., San Diego, Calif., to c.f.o. U. S. S. Lexington. (Aug. 3)

Cruise, Lt. (j.g.) Edgar A., detached VS Sqdn. 1S, Aircraft Sqdns., Scgt. Flt., to VF Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 3)

Cuddih, Lt. George T., detached Nav. Air Sta., Anacostia, D. C.; to VF Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. Orders Mar. 30, 1927, to VF Sqdn. 6S, Aircraft Sqdns., Scgt. Flt., revoked. (Aug. 3)

Davis, Lt. (j.g.) William P., detached U. S. S. Oklahoma; to Nav. Air Sta., Pensacola, Fla. (Aug. 2)

Farnsworth, Lt. Comdr. John S., detached VO Sqdn. 6S, Aircraft Sqdns., Scgt. Flt., to Rec. Bks., Hampton Roads, Va. (Aug. 2)

Ferguson, Lt. Comdr. Rufus A. (DC), detached Nav. Air Sta., Pensacola, Fla., to U. S. S. Anacostia. (July 27)

Fitzsimmons, Ens. John P., detached U. S. S. Nevada; to c.f.o. U. S. S. Saratoga. (Aug. 2)

Gillon, Lt. John F., detached VS Sqdn. 1S; to VT Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 4)

Goldthwaite, Lt. (j.g.) Robert, detached Nav. Air

Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (Aug. 9)

Grisler, Lt. Comdr. Otto W. (M.C.), detached Nav. Air Sta., San Diego, Calif.; to temp. duty Nav. Med. School, Washington, D. C. (July 25)

Halland, Lt. Herman E., detached Naval Sta., Nav. Oper. Base, Hampton Roads, Va., to VO Sqdn. 6S, Aircraft Sqdns., Scgt. Flt. (July 25)

Harpine, Lt. Charles G., to duty Aeronautical Engineering Laboratory, Naval Aircraft Factory, Phila., Pa. (Aug. 11)

Hardison, Lt. Comdr. Osborne B., detached Naval Academy; to command VF Sqdn. 5S, Aircraft Sqdns., Scgt. Flt. (Aug. 4)

Hede, Ens. Adolph, detached U. S. S. Oklahoma; to c.f.o. U. S. S. Lexington. (July 25)

Hoover, Lt. Guy B., detached U. S. S. Lawrence; to c.f.o. U. S. S. Saratoga. (Aug. 2)

Johnson, Lt. Jesse G., detached VS Sqdn. 1S; to VT Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 4)

Kauffman, Lt. Frederick B., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (July 29)

Kauffman, Lt. (j.g.) Roland P., detached VS Sqdn. 1S, Aircraft Sqdns., Scgt. Flt.; to Nav. Air Sta., Pearl Harbor, T. H. (July 25)

Kernode, Lt. (j.g.) Michael H., detached VS Sqdn. 1S, Aircraft Sqdns., Scgt. Flt., to Nav. Air Sta., Pearl Harbor, T. H. (July 25)

Klimas, Ens. Bernard D., detached U. S. S. Nevada; to c.f.o. U. S. S. Lexington. (Aug. 2)

Larson, Ens. Charles O., detached U. S. S. Nevada; to c.f.o. U. S. S. Saratoga. (Aug. 2)

Lee, Lt. (j.g.) Charles L., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 1S, Aircraft Sqdns., Scgt. Flt. (Aug. 4)

Lee, Ens. Fitzhugh 2d, detached U. S. S. Oklahoma; to c.f.o. U. S. S. Saratoga. (July 25)

Loftus, Lt. Stephen A., detached Wright Aeronautical Corp., Paterson, N. J.; to Asst. Insp. of Nav. Mat'l, New York. (Aug. 5)

Lyon, Lt. John B., detached VS Sqdn. 1S; to VT Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 4)

Miller, Lt. (j.g.) Louis N., detached Subm. Base, New London, Conn., to c.f.o. U. S. S. Saratoga. (Aug. 2)

Moss, Lt. (j.g.) Richard S., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (Aug. 9)

Mumma, Ens. Albert G., detached Curtis Guild Rifle Range, Wakefield, Mass.; to temp. duty Navy Rifle Team, Camp Perry, O. Upon completion, to duty c.f.o. U. S. S. Lexington. (Aug. 18)

Mumma, Ens. Morton C., Jr., detached Curtis Guild Rifle Range, Wakefield, Mass.; to temp. duty Navy Rifle Team, Camp Perry, O. Upon completion, to duty c.f.o. U. S. S. Lexington. (Aug. 18)

McDonald, Lt. (j.g.) Charles C., detached Naval Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (Aug. 9)

McDonough, Ens. James F., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (Aug. 9)

McDowell, Lt. (j.g.) Percival E., detached U. S. S. Oklahoma; to c.f.o. U. S. S. Lexington. (July 25)

McKenna, Lt. Francis J., detached VS Sqdn. 1S, Aircraft Sqdns., Scgt. Flt.; to VF Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 3)

McLean, Lt. (j.g.) Ephraim R., Jr., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (Aug. 9)

Nicol, Ens. Bromfield B., detached VS Sqdn. 1S; to VT Sqdn. 3S, Aircraft Sqdns., Scgt. Fleet. (Aug. 4)

O'Berine, Ens. Frank, detached U. S. S. Nevada; to c.f.o. U. S. S. Lexington. (Aug. 2)

Orville, Ens. Howard T., detached Curtis Guild Rifle Range, Wakefield, Mass.; to temp. duty Navy Rifle Team, Camp Perry, O. Upon completion, to duty c.f.o. U. S. S. Lexington. (Aug. 18)

Porter, Lt. (j.g.) Joseph L. (M.C.), detached U. S. S. New Mexico; to Nav. Air Sta., San Diego, Calif. (July 25)

Pound, Ens. Harold C., detached U. S. S. Oklahoma; to c.f.o. U. S. S. Saratoga. (Aug. 9)

Parker, Lt. (j.g.) Elton C., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 1S, Aircraft Sqdns., Scgt. Flt. (Aug. 9)

Pyne, Ens. Chas. C., detached Curtis Guild Rifle Range, Wakefield, Mass.; to temp. duty Navy Rifle Team, Camp Perry, O. Upon completion, to duty c.f.o. U. S. S. Lexington. (Aug. 18)

Redfield, Ens. Morgan, detached U. S. S. Nevada; to c.f.o. U. S. S. Saratoga. (Aug. 2)

Rhea, Lt. (j.g.) Fitzhugh L., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 1S, Aircraft Sqdns., Battle Flt. (Aug. 9)

Richardson, Capt. Holden C. (C.C.) order April 18, 1927 revoked; to continue duty Bu. Aero. (Aug. 11)

Roberts, Ens. David G., detached U. S. S. Oklahoma; to c.f.o. U. S. S. Lexington. (July 25)

Rooney, Lt. (j.g.) Joseph J., detached VS Sqdn. 1S, Aircraft Sqdns., Scgt. Flt.; to VF Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 9)

Schoeffel, Lt. Malcolm F., detached Bu. Aero.; to connection organization of VT Sqdn. 4B (U. S. S. Langley). Orders June 16, 1927, to Experimental Unit, Aircraft Sqdns., Scgt. Flt., revoked. (July 29)

Schlossbach, Lt. Comdr. Isaac, detached command VF Sqdn. 5S, Aircraft Sqdns., Scgt. Flt.; to Naval Academy. (Aug. 3)

Sease, Lt. Hugh St. C., detached VS Sqdn. 1S; to VT Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 4)

Short, Lt. Gilas E., detached VS Sqdn. 1S; to VT Sqdn. 3S, Air. Sqdns., Scgt. Flt. (Aug. 4)

Simrell, Lt. (j.g.) Warren F., Jr., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 1S, Aircraft Sqdns., Scgt. Flt. (Aug. 9)

Slattery, Lt. William J., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (July 29)

Smith, Lt. (j.g.) Donald F., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (Aug. 9)

Spriggs, Lt. Alva J., detached c.f.o. U. S. S. Saratoga; to Battleship Divs., Battle Flt., as aide on staff of Vice Adm. William V. Pratt, U. S. N., Comdr. Battleship Divs., Battle Flt., on Sept. 22. (July 25)

Sullivan, Lt. (j.g.) Frank K., (DC), detached Nav. Trng. Sta., Great Lakes, Ill.; to Nav. Air Sta., Pensacola, Fla. (July 27)

Sykes, Lt. James N., detached VS Sqdn. 1S, Aircraft Sqdns., Scgt. Flt.; to Bu. Aero. (Aug. 3)

Taylor, Lt. Duane L., detached Navy Yard, N. Y.; to c.f.o. U. S. S. Saratoga. (Aug. 16)

Thompson, Lt. Paul N., Jr., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 2B, Aircraft Sqdns., Battle Flt. (July 29)

Townsen, Lt. Guy D., detached Nav. Aircraft Factory, Navy Yard, Phila., Pa.; to connection organization VT Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. Orders May 6, 1927, to VT Sqdn. 1, Aircraft Sqdns., Scgt. Flt., revoked. (July 29)

Trappell, Lt. (j.g.) Frederick M., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 1S, Aircraft Sqdns., Scgt. Flt. (Aug. 9)

Treadwell, Lt. (j.g.) Paul C., detached VS Sqdn. 1S, Aircraft Sqdns., Scgt. Flt.; to VF Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 3)

Vroom, Lt. Comdr. Guysbert B., detached U. S. S. Maryland; to c.f.o. U. S. S. Lexington. (Aug. 11)

Wagner, Lt. Comdr. Frank D., detached command VF Sqdn. 6B, Aircraft Sqdns., Battle Flt.; to Tactical and Gunnery Officer, Aircraft Sqdns., Battle Flt. (Aug. 2)

Waldron, Lt. (j.g.) John C., detached Nav. Air Sta., Pensacola, Fla.; to VT Sqdn. 1S, Aircraft Sqdns., Scgt. Flt. (Aug. 9)

Waller, Ens. Raymond R., detached VF Sqdn. 2B, Aircraft Sqdns., Battle Flt. (Aug. 15)

White, Ens. John W., detached Nav. Academy; to U. S. S. Arizona; orders July 2, 1927, to c.f.o. U. S. S. Saratoga, revoked. (Aug. 9)

Whitehead, Lt. Richard F., detached VJ Sqdn. 1B, Aircraft Sqdns., Battle Fleet; to c.f.o. U. S. S. Saratoga. (Aug. 19)

Yanguell, Lt. (j.g.) Charles C. (M.C.), detached Nav. Hospital, Boston, Mass.; to c.f.o. U. S. S. Lexington. (Aug. 11)

MARINE CORPS AIR ORDERS

THE following Marine Corps Air orders have been issued as of the dates indicated in brackets:

Archibald, Capt. R. J., detached M. B. Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

Dawson, 2d Lt. M. L., Jr., relieved from special temporary aviation duty at Naval Academy, Annapolis, Md.; ordered to M. B., Navy Yard, Phila., Pa. Authorized to delay en route until Aug. 31. (Aug. 12)

Dreyspring, 2d Lt. J. G., relieved from special temporary aviation duty at Naval Academy, Annapolis, Md.; ordered to M. B., Navy Yard, Norfolk, Va. (Aug. 12)

Harmon, 2d Lt. J. C., detached M. B., Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

Henkle, 1st Lt. C. W., detached M. B., Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

McCullough, 1st Lt. C. H., detached M. B., Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

Muchay, Capt. F. P., detached M. B., Quantico, Va.; to Air Corps Tactical School, Langley Field, Hampton, Va.; authorized delay en route until Sept. 5. (Aug. 3)

O'Neill, 2d Lt. D. F., relieved from special temporary aviation duty at Naval Academy, Annapolis, Md.; ordered to M. B., Quantico, Va. (Aug. 12)

Pierce, Capt. F. E., detached M. B., Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

Ross, 2d Lt. R. P., Jr., relieved from special temporary aviation duty at Naval Academy, Annapolis, Md.; ordered to M. B., N. O. B., Hampton Roads, Va. (Aug. 12)

Rowell, Maj. R. E., detached M. B., Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

Sabater, 2d Lt. J., relieved from special temporary aviation duty at Naval Academy, Annapolis, Md.; ordered to M. B., N. O. B., Washington, D. C. (Aug. 12)

Smith, 1st Lt. J. N., to special temporary aviation duty beyond the seas with Aircraft Sqdns., 3d Brigade, China. (Aug. 12)

Thomas, 2d Lt. E. A., detached M. B., Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

Weir, 2d Lt. E. W., detached M. B., Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

Wodarczyk, Maj. Gnr. M., detached M. B., Quantico, Va.; to Observation Squadron 7, Nicaragua. (July 30)

Zuber, 2d Lt. A., detached M. B., N. A. S., Lakehurst, N. J.; to M. B., Quantico, Va. Authorized delay en route until Sept. 15. (Aug. 15)

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ST. LOUIS AIR NOTES

By THOMAS W. PARRY, JR.

IMMEDIATE purchase by the city of Lambert-St. Louis Flying Field at Bridge-ton, St. Louis County, and erection of a downtown airport is recommended by the Aeronautics Committee of the St. Louis Chamber of Commerce in a special report submitted recently.

Lambert-St. Louis Field, consisting of 169 acres, is owned by Major Albert Bond Lambert, dean of aviation in St. Louis, and chairman of the Aeronautics Committee of the Chamber of Commerce. The field has been in operation since 1920, and on it are located the Air Mail, Missouri National Guard Air Unit, two commercial companies, many privately owned companies, machine shops, hangars and other buildings. The committee urges acquisition of 250 acres of available land adjoining the field. It is the intention to erect an administration building and depot for contemplated transcontinental airlines on this space.

Two prospective locations are recommended for the downtown airport. They are: (1) Property immediately north of the Merchants Bridge and (2) property in St. Clair County, Ill.

PHIL DeC. BALL, owner of the St. Louis Browns' baseball club, has bought a Mahoney B-1 brougham, formerly called the Ryan brougham, which he intends to use for business and pleasure trips. Ball intends to go to San Diego, home of the B. F. Mahoney Aircraft Company, and with his pilot, Lieut. Frank Dunn, fly the plane back to St. Louis.

ROBERTSON TO MANUFACTURE PLANES

THE Robertson Aircraft Corporation, holder of the St. Louis-Chicago air mail contract, will soon erect an airplane factory in St. Louis.

As a step in that direction, the corporation has purchased from the Curtiss Aeroplane & Motor Corporation of Garden City, N. Y., 1,150 OX5 Curtiss motors and a large stock of parts—the largest strictly commercial deal ever made on aircraft motors.

"We have surveyed the commercial airplane manufacturing situation throughout the country and we find that the time is right for the expansion of this branch of aviation," Major William B. Robertson said. "Of some 40 factories throughout the country we find it impossible to get delivery of an airplane for three to four months, and some are virtually sold out for the rest of the year."

Increasing interest in aviation is indicated by an enrollment of 94 students at the Robertson flying school at Lambert-St. Louis field so far this year. In the same period 70 have been graduated from the school.

FORD FLIES WITH COLONEL LINDBERGH

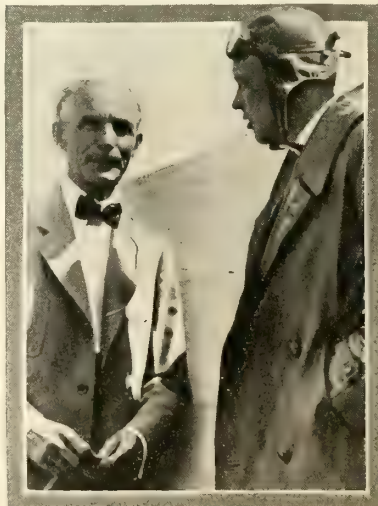
ON his visit to Ford Airport on August 11th, Colonel Lindbergh invited Henry Ford to be a passenger in the *Spirit of St. Louis*—the first time that the Colonel has taken any one up in his famous plane for a pleasure ride. The invitation was accepted immediately by Mr. Ford. An extra seat was placed in the cabin and Mr. Ford was soon enjoying the thrill of his first ride in an airplane.

"Fine! That was simply great and I certainly enjoyed it. I wouldn't mind taking a little spin every day," Ford said when he climbed out after being in the air about fifteen minutes.

Then Edsel Ford, who had been watching the flight with great interest, was asked to be Colonel Lindbergh's next passenger over the Ford industrial plants. It was also his first ride and he experienced the same enjoyment of flying as did his distinguished father.

Meanwhile, Henry Ford had arranged for a flight in his three-motored transport. The party consisted of Henry and Edsel Ford, Colonel Lindbergh, P. E. Martin, vice president of the Ford Motor Company, William B. Mayo, William B. Stout, Major Thomas G. Lanphier, Mrs. Ray Dallinger, wife of the manager of Ford's Farm Properties, Charles E. Sorensen, superintendent of the Fordson Plant and Harry Brooks, the pilot. The Colonel piloted the ship for awhile and then turned the controls over to Harry Brooks.

Henry Ford remarked, "Flying is still 90 per cent man, but we are now building planes—and I am devoting a large part of my time and energy to building them—which the younger generation will be able to fly just as they drive automobiles now."



Wide World Photo.

Henry Ford and Col. Charles Lindbergh.

DETROIT AIR NEWS

By FRANK BOGART

DETROIT aviation supporters have dispatched three aspirants for long distance flight honors this past month, in addition to the Buhl sesqui-plane which left Detroit late in July for the Pacific Coast, and, at this writing, has been lost five days in the Pacific. This was the "Miss Doran," named after Mildred Doran, Flint, Michigan, school teacher.

Two of the planes which have just left are Stinson-Detroiter monoplanes. Edward F. Schlee, president of the Wayco Oil Corporation and also of the Wayco Air Service, Inc., which has made a surprising success of the aerial taxi trade hereabouts since May 1, keeping three ships busy constantly, is the owner of one of these.

With William S. "Billy" Brock as his pilot-navigator, Schlee is going after a new round the world record. The present figure is 28 days and a fraction, held by E. S. Evans, also of Detroit, but not made entirely by airplane. Brock is a veteran airman, having had close to 5,000 hours in the air and experience under all possible conditions while flying the air mail. Schlee and Brock are at Old Orchard, Me., for their Atlantic take-off.

The other Stinson monoplane is now at Brunswick, Ga., whence it will fly 4,500 miles, mostly over water, to Rio de Janeiro, as soon as weather permits. Paul R. Redfern, 25-year old pilot, a native of Rochester, N. Y., lately employed as pilot for the Coast Guard on the South Atlantic Coast against the rum smuggling fleets, is going on this flight alone. Among his backers are a number of wealthy Detroiters who have winter estates in Georgia.

The third machine to depart recently is a Hess Bluebird biplane. It was built for Captain Frederic Giles, British aviator, lately of Wellington, New Zealand, who obtained the financial support of William H. Rosewarne, Detroit contractor. Giles plans five hops for his 11,000-mile return flight to New Zealand, by way of San Francisco, Honolulu, Brisbane, Sydney and thence to Wellington. He has been dogged by ill luck for several weeks, with delays in the construction of his plane, and was forced to leave here without proper motor and flight tests. At this writing he is stuck in an Indiana cornfield, with hopes of getting out in time to reach San Francisco to be of some aid in the search for the missing Dole flight ships. He sent back word that he would not allow their fate to deter him from his chief purpose.

Two other Stinson monoplanes are being constructed for flights to England.

OF course one of the greatest single aviation stories in all history was the personal flight given Henry Ford by Colonel Charles A. Lindbergh, it being the first time the billionaire had ever taken to the air. So

AIRPORTS

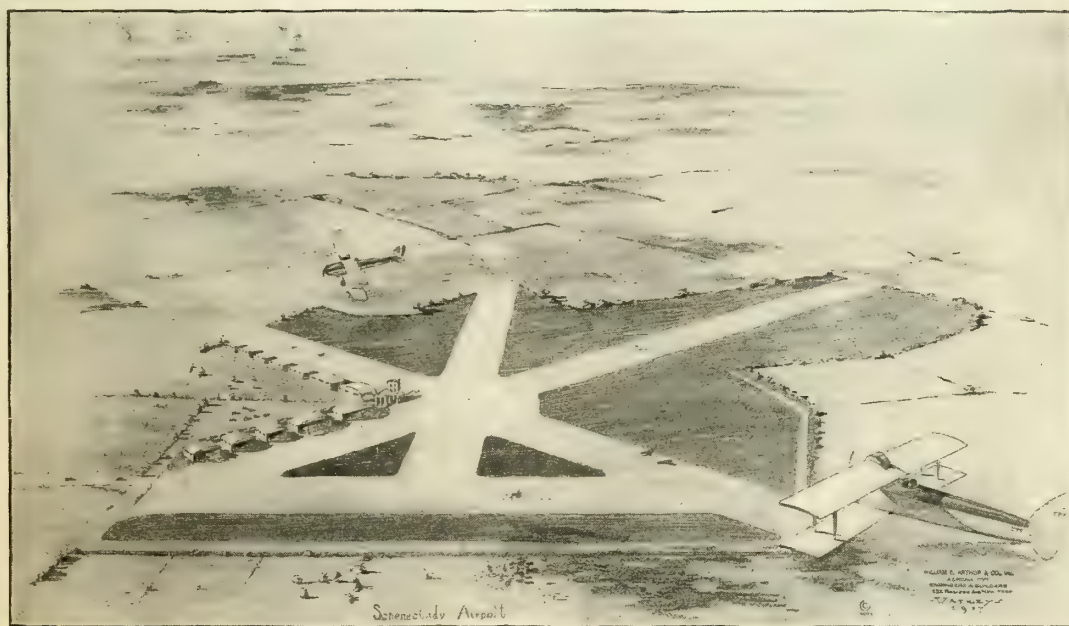
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enthused was he that after he and Edsel had ridden in the "Spirit of St. Louis," Henry Ford ordered out one of his tri-motored monoplanes and organized a large party for a long flight all over Detroit and environs.

WILLIAM B. STOUT will also launch his new line to Cleveland next month. Since August 1 the Grand Rapids line has been discontinued and the Stout machines have been devoting themselves to 30-minute, five dollar sight-seeing trips around Detroit. They carried 2,600 persons in July and Stanley E. Knauss, general manager, says the number for August will exceed 3,000.

Incidentally the Stout machines have been making night flights with great success lately. Mrs. Evangeline Lindbergh was flown to Grand Rapids to see her son and returned at night, and a few days later she was again a member of a party of society folk who flew to Cleveland for dinner at the home of E. E. Allyn, returning after midnight.

PREPARATIONS are being rushed for the start of de luxe air service between Detroit and Florida, using Ford-Stout transports, November 1. The Stout Air Services, Inc., will operate the line for a group of Detroit capitalists. The experimental path-finding trip will be held September 12. Weekly trips will be made from November 1 till January 1, when a second Ford machine will be placed in service. Advance reservations warrant placing this order, company officials of the Dixie and Northern Air Line, the holding concern, state. Cincinnati, Nashville and Atlanta will be stopping points.

KANSAS CITY - DENVER AIRLINE OPEN

THE Chicago and Southwestern Airlines, for passengers and express, opened their Kansas City to Denver Division on August 15th. The remainder of the route connecting Chicago, St. Louis, Kansas City, Denver, Dallas and Los Angeles will be put in operation as soon as ships can be obtained and traffic warrants. Ryan and Air King planes will be used.

The passenger fare from Denver to Kansas City is \$36 with 20 pounds of baggage allowed free. Ships leave the airport at Denver at 5 a. m., arriving at Kansas City at 11:30 a. m. The west bound ship leaves Kansas City at 1 p. m., arriving at Denver at 7:30. Both ships stop 20 minutes at Topeka. Free transportation is furnished to and from the airport to the center of Denver and Kansas City.

"BY AIR TRUCK"

THE air delivery truck of the Royal Typewriter Company which demonstrated the dropping of typewriters from the air by means of parachutes at Curtiss Field on August 4th, has completed its first business trip. The plane flew last month from Hartford, Conn., to Havana, Cuba, with a load of typewriters consigned to the Havana agency of the company. En route, it made deliveries at Baltimore, Richmond, Savannah, Raleigh, Norfolk, Miami and other cities along the coast. In some cases these deliveries were made without landing by means of the plane's parachute attachment. This new development in commercial flying was used only at points at which it was impossible or impractical for the plane to land and served to speed up the journey and enabled the "flying truck" to make a large number of small deliveries without losing time in landing and taking off.

This newest commercial plane is a Stout all metal monoplane, powered with three Wright Whirlwind motors. It is especially designed to carry a cargo of typewriters; its cabin contains rows of racks in which 210 portable typewriters can be stowed. In the after part of the fuselage is located a trap door through which cases of typewriters attached to especially built parachutes are projected. These cases contain three portable typewriters and in demonstrations at Curtiss Field, as well as enroute to Havana, parachute deliveries were made without damage either to the wooden cases or to their contents. The establishment of this air delivery service by the Royal Typewriter Company came after a thorough study of the practicality of such an enterprise and was only undertaken when it was proven to be economically sound, according to an announcement made by George Edward Smith, president of the company.

"I am absolutely convinced of the future of this phase of commercial aviation," Mr. Smith said. "And, before long, I prophesy that the phrase 'by air truck' will be as significant and familiar as 'by air mail' is now.

"We inaugurated this air delivery service only after assuring ourselves that it would be a profitable investment. We feel certain this service will be a dividend paying proposition. This service, at any rate, is our contribution to the practical use of the airplane in the service of commerce."

The air delivery truck is piloted by John A. Collings, a former pilot on the freight routes of the Ford Company.

SPRINGFIELD NEWS

By HENRY P. LEWIS

THE magic of Colonel Charles A. Lindbergh has touched Springfield, Mass., and a State Law is the only deterrent to the city's establishment of a municipal airport immediately. Two hundred acres of level land, free of obstructions bordering the Connecticut River and situated in the town of Longmeadow has been selected as a site for the airport, but a legislative enabling act is necessary before Springfield can purchase land beyond its legal boundary. The field is now being used under lease by the Springfield Airlines, Inc., one of two airplane operators in Springfield, and a class of 22 students is being given flight instruction by Harry Hermann, pilot and president of the company.

THE other company, the Massachusetts Airways, Inc., is flying two Alexander Eaglerocks from a tract in the town of Agawam and both companies are doing a brisk passenger carrying business. Both look forward to the establishment of the municipal airport as the move which will inaugurate aerial transportation on a sound basis. The Colonial Air Transport Company is endeavoring to secure sufficient air mail in Springfield, Westfield and Holyoke to warrant regular service to the three cities to connect with the Boston-New York line which it operates under contract.

FURTHER stimulation to the airmindedness of the city is given by the approach of an air pageant in which between 40 and 50 planes are expected to participate. Intercity races and altitude contests have been arranged with silver trophies for the winners. Lieut. Harlan F. Banks will be field manager and he has received definite assurance of attendance from 20 pilots, including Thea Rasche, German aviatrix. Between 75,000 and 100,000 persons are expected to attend the three-day exhibition which begins September 3rd.

A DOZEN student aviators are nearing their solo flights and have formed a club and purchased a Swallow biplane from the instructing company. The plane is used at present for instruction, the instructor making a nominal charge for service while using the club plane. As fast as students are ready for solo they will be sent up in their own plane and will get in the 50 to 200 hours of solo flying necessary before qualifying for a license.



The Royal Typewriter Co.'s Stout-Ford air truck which delivers typewriters by parachute.



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 Georgia—Georgia Airways, Inc., Candler Field, Atlanta, Ga.
 Ky. and Tenn.—Datin Eaglerock Sales Co., 2031 Central, Memphis
 N. C. & Va.—Charles Flying Service, 3100 Garland, Richmond, Va.
 Northern Iowa—Pioneer Flyers, Inc., Mason City, Iowa
 Ind.—Ray Kuhl, 217 No. Main St., Mishawaka, Ind.
 Michigan—Niles Airways, Niles, Michigan
 N. Y., N. J. and Conn.—Atlantic Airways, New Rochelle, N. Y.
 Wisconsin—Hall Aircraft Co., 101 Scott St., Wausau, Wisconsin
 W. Penn. and N. E. Ohio—Lt. J. P. Morris, Pittsburgh Airport, Aspinwall, Pittsburgh, Pa.
 E. Mo., Ark. and S. Ill.—Bridgeton Aircraft Corp., 223 Pierce Bldg., St. Louis
 W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 223 W. 12th St., Kansas City, Mo.
 Okla. and Tex. Pan.—Southwest Airplane Sales Corp., Britton, Okla.
 N. M. and Cen. Texas—Browning Airplane Sales, Wichita Falls, Tex.
 Southern Texas—Marion P. Hair, P. O. Box 420, San Antonio, Tex.
 So. Cal. and Ariz.—Aero Corp. of California, Western Ave., at 99th St., Los Angeles
 Northern California—Jas. L. Mayberry, 1210 Broadway, Fresno
 W. Wash. and W. Ore.—Story Eaglerock Sales, Mueller-Harkins Airport, Tacoma, Wash.
 Wyo., Mont. and W. Neb.—Wyoming Airways, Inc., Casper, Wyoming
 S. Dak. and N. Dak.—Rapid City Air Lines, Inc., Rapid City, S. D.
 W. Kansas and E. Nebraska—C. E. Steele, Dodge City, Kansas
 La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
 W. Va. and E. Ohio—Lyle H. Scott, 328 2nd St., Marietta, Ohio
 Utah, Nevada, S. Idaho—Rocky Mountain Airways, Salt Lake City
 Mississippi—Tri-States Airways, Bry Block, Memphis, Tenn.
 Maryland and E. Pennsylvania—Hybla Valley Aviation Co., Alexandria, Va.
 So. Carolina—Ereth Williams, Greenwood, S. C.
 Me., N. H., Vt., R. I., Mass.—Massachusetts Airways Corp., 1597 Main St., Springfield, Mass.
 N. E. Ind. and W. Ohio—Jos. W. Dye, 203 Carroll Bldg., Ft. Wayne, Ind.



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SHIP - TO - SHORE FLYING



P & A Photo.

Chamberlin just after taking off the *Leviathan* with a pouch of mail bound for shore.

CLARENCE D. CHAMBERLIN took off from the specially built runway on the *Leviathan* at 8:14 a. m. August 1st, on a demonstration flight to show the feasibility of mail delivery from ship to shore. Steamship officials believe that if a regular service of this kind can be maintained it will result in saving two days time in the delivery of important mail between Europe and the United States. Chamberlin's demonstration flight was made when the liner was bound for England and had reached a distance about 100 miles from New York. The ship was headed so that the runway faced the wind, to aid taking off quickly. Chamberlin took off with the utmost ease and headed for the shore flying at a low altitude. Curtiss Field was reached at 9:30 a. m. After greeting his friends at the field he took off again and landed at Teterboro, N. J., where he delivered a sack of mail which he brought from the ship to the postmaster. This was the first ship-to-shore flight from the deck of a passenger vessel.

Chamberlin flew from a platform 114 feet long and 108 feet above the waterline at the lower end. The runway descends at an angle of 45 degrees from a point to the starboard side and just in front of the forward funnel diagonally over to the front side of the ship's bridge. A slight rise at the end of the track is designed to give the plane a final upward thrust.

His plane, weighing a little over 2,000 pounds including 40 gallons of fuel, rose into the air before three-quarters of the runway had been used. There was a 15-mile wind and the ship was going about 15 miles per hour.

Chamberlin believes that regular ship-to-shore service is practicable, but favors catapults rather than runways as a safer and surer means of taking off.

The first flight from the deck of a ship took place on November 14th, 1910, when Eugene Ely flew from the deck of the cruiser *Birmingham* stationed at Hampton Roads, Virginia, landing 5 minutes later at Willoughby Spit, near Norfolk, a distance of about 3 miles. The platform from which Ely took off was 25 feet wide and 85 feet long, built with a 5-degree angle incline. The ship was not moving when Ely took off in his Curtiss pontoon-equipped pusher, which would have aided him greatly. When he landed on the water at Willoughby Spit the

impact damaged his propeller, but he proved that it was possible to fly from a ship in safety.

In January, 1911, Ely flew in a Curtiss biplane from a field near San Francisco and landed on a platform built on the deck of the U. S. S. *Pennsylvania* anchored in the bay. He then took off from the platform on the ship and landed back on the shore.

The Post Office Department has been operating a mail service to ships for seven years between Seattle, Washington, and Victoria, B. C., and for four years between New Orleans, and Pilottown, La. The Department plans to establish the same sort of service for expediting transatlantic mail, both in-coming and out-going.

ELY—THE FATHER OF SHIP-SHORE FLYING

BY JOHN COLLINS

THE "jimmylegs" on the U. S. S. *Birmingham* lets his eyes rove over the fantastic thing sprawled from the forward turret to the bow and swears softly. He had labored a week setting up the damn contraption and now they had him out on a cold, foggy day to fool with it!

Pointing a contemptuous finger at it, undulating there like a Chinese dragon, he roars:

"Hey, you guys, yank the tarpaulin off it and one of you go tell that nut she's all ready for 'im."

Ten or twelve gobs move forward and begin tugging away at the canvas. One steps over to a hatchway, thrusts his head into it, and shouts:

"Hey, Mr. Ely, the runway's ready."

In reply a football helmet thrusts itself

above the deck, followed by a long, slim face, a badly smudged linen collar of the "choker" variety, and a shiny norfolk suit. The face veers in the direction of the jimmylegs, nods, and melts into a smile. But the jimmylegs continues to scowl.

By now the gobs have skinned the dragon of its canvas. What had been the hump stands revealed as a large canvas box-kite freighted in the middle with an engine and propeller. Before it stretches a runway of new lumber which as it terminates over the ship's bow curls upward into a kind of grim smile.

Mr. Ely, who meanwhile has added a touch of comedy to the performance by turning the football helmet about so that its back drapes down over his forehead, is depositing himself into the "flying machine." He does this as carefully as if he were sitting into the lap of the gods. He is.

"All ready", pipes Mr. Ely above the tiny tattoo of the little engine. The gobs retreat a few paces. The voice of the engine rises to a shrill scream. The thing flounders off down the runway taking Mr. Ely with it. Its bumpy progress smoothens into a glide. It bounds off the end of the runway and disappears below the bow as if struck down with a sledge hammer.

Surging to the rail the gobs are confronted, not with a tangle of bamboo and canvas bobbing about in the water, but with the spectacle of Mr. Ely soaring triumphantly away like a bird. They watch until he is blotted out by the fog.

"A great stunt," is the first remark to break the silence.

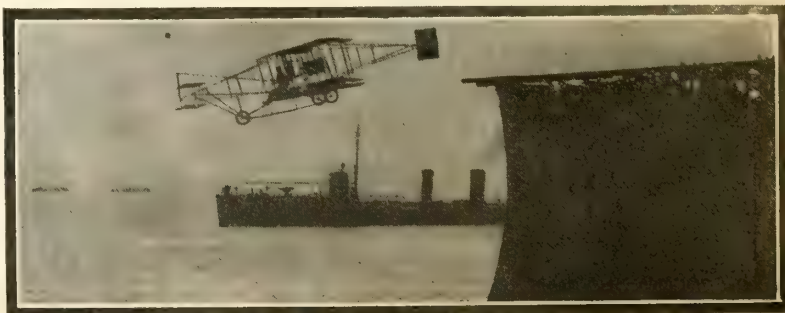
"Yah," retorts the jimmylegs, "but what use is it?"

Seventeen years later—it was in November, 1910 that Eugene Ely made this first flight from ship to shore—that question, "What use is it?" was echoed by scoffers on the deck of the *Leviathan*, as another Iowan, Clarence Chamberlin, took off from an improvised runway, and headed for Long Island. But this time an answer came promptly and in a way that even the most hard-headed business man could appreciate.

The Postal authorities announced that they considered ship-to-shore flights practical for expedited handling of the mails and would install such service at the earliest opportunity. A crazy stunt had become a matter of dollars and cents.

Back in 1909 the youth destined to be the father of this innovation was roaming Cali-

(Continued on page 332)



Underwood & Underwood.

Eugene Ely flying in 1910 from the deck of the U. S. S. *Birmingham* in a Curtiss pusher.



WACO TEN—OX5 MOTOR

Learn as other pilots have — the value of buying a WACO airplane

Airplane pilots are today covering innumerable miles, in both commercial and pleasure pursuits, in WACO airplanes.

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The New WACO Ten surpasses all previous models in style, performance and safety.

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Its sturdy fuselage and wing sections, engineered to withstand motors from 90 to 250 horse power, give you more safety than ever before.

Ask pilots flying WACO or for the name of our nearest distributor and he will prove WACO superiority to you.



MANUFACTURED BY ADVANCE AIRCRAFT CO., TROY, OHIO

SHIP-TO-SHORE FLYING

(Continued from page 330)

fornia looking for a job. He had left the security of a comfortable home in Davenport, Iowa. Perhaps it is more correct to say that Ely was looking for a job that suited him. Being aggressive and friendly, he found jobs in general easy to get.

His instinct for the apparently useless soon pulled him into automobile racing. While dallying with this art he heard of a wealthy sportsman who had bought a flying machine. The sportsman, it seems, couldn't fly the thing himself. Within an hour young Ely was offering his services.

"I suppose you know all about flying," he was asked.

His reply may be inferred from the fact that next day he essayed an exhibition flight for his new employer. A few hours after the exhibition opened he had bought the wreck from his former boss for fifty dollars. With such parts as he was able to salvage he put together another machine. A miraculous period of self-tuition and necks were craning to the sputter of his engine at circuses and fairs all along the Pacific Coast.

He now invades the East. An aviation "meet" is scheduled for the spring of 1910 at Sheepshead Bay. Unlike another aerial Lochinvar who was to hurtle in out of the West on his way to Paris years later, young Ely spanned the continent in a passenger train. Considering his finances, Ely's trip was an achievement also.

The meet opens and 10,000 spectators gap at the suicidal antics of the new aviator from the Coast. His "dip of death" electrifies them with a new thrill. It wasn't much as stunts are rated now. He merely went into a steep glide and then zoomed sharply. But with an engine which turned as temperamentally as a roulette wheel, the stunt merited its title.

Tingling from the wine of applause this youth seeks more crowds to stupefy. Gimbel Brothers, he hears are offering \$5,000 to the first man who will fly from New York to Philadelphia. It is to be a straightaway flight with no thrills and so does not draw him so strongly. But the newspapers rouse public interest in it and Ely enters. He fails to finish. Engine trouble brings him down soon after he takes off.

Failure could have but one effect on a youth who soared victorious without an instructor from the wreck of the first flying machine he ever saw. He hastens to enter the Chicago to New York flight arranged by the *New York Times*. Nearly every aviator in the country is scheduled to compete. But all drop out for one reason and another just before the appointed date. Ely starts alone. Twenty minutes after he takes off his engine starts to miss. He noses her over hurriedly and makes a bad landing, bruising himself and damaging the machine. Feverishly he makes repairs and tries to locate his engine trouble because as the papers of that day put it—"some hours of the precious 168 allowed by the judges for the trip had already elapsed."

He takes off again but once more is forced down, landing this time in a ditch. In a frenzy he takes off for the third time but fate and a piece of chewing gum discovered later in his feed line have decreed that he shall not finish. Reluctantly he abandons the flight, having travelled 22 miles out of Chicago in 25 hours.

Early in 1911, his fateful year, Ely is back on the Pacific Coast. Stunts still fascinates him. On January 18th he flies from the shore and lands successfully on the deck of the *U. S. S. Pennsylvania* anchored off San Francisco.

The summer finds him performing the "dip of death" again at fairs and circuses and in September he moves on to Ohio for a small meet to be held at Canton. On the opening day he is gliding down to a landing as Harry Atwood is taking off. Their wing-tips brush and Ely crashes. Though badly bruised and shaken up he continues his daily flight until the fair ends.

Two weeks later he is to make his last flight. At Macon, Georgia, 10,000 people see the "dip of death" suddenly become literal.

Ely's flying career was, to use the hackneyed term, meteoric. It ended when he was only twenty-six years old. Less than three years measure the time between his first flight in California and his last in Georgia. Few of his contemporaries would admit that those three years were anything but futile. Time, however, has a disconcerting trick of snatching the mask of futility from a man's work and revealing underneath something of lasting benefit to the race.



THE Burnelli type RB2 is the world's largest passenger airplane. In addition to a crew of three, comfortable seating accommodations are provided for thirty passengers in a cabin 14 feet wide, 6½ feet high and 16 feet long in an airfoil section fuselage. Power required: two 650 h.p. water cooled engines. Burnelli types of monoplane or biplane design.

SOME OF THE ADVANTAGES OF THE BURNELLI TYPE:

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SUCCESS OF CONTRACT AIR MAIL ROUTES

THE tremendous success of the operation of twelve contract air mail routes throughout the United States during the months of May, June and July, 1927, in comparison to the subsidized routes of Europe, is shown in statistics made public recently by Postmaster General New. These figures show that for the month of May there were 46,133 pounds of mail carried on these routes, for which the contractors received \$133,738.10. For the month of June there were 55,026 pounds of mail carried, for which the contractors received \$159,201.84, while for July there were 53,521 pounds of mail carried and the contractors were paid \$155,183.95. While the amount of mail carried was less for July than for June, there were but 25 business days in the month of July as against 26 for the month of June, which accounts for the apparent falling off in postal business.

There was an increase of 16.3 per cent in the business of the twelve contract air mail routes for the month of July, 1927, over that for the month of May, while the month of June showed an increase of 19.3 per cent in business on these routes over that of May, 1927.

Six of the twelve routes in the United States, Nos. 3, 5, 6, 8, 9 and 12 performed 100 per cent service during the month of

July, according to the figures made public by the Postmaster General.

Figures made public by Second Assistant Postmaster General Glover show that the total postal matter handled by seven air mail routes operating from Bourget field, Paris, France, for the month of March, 1927, amounted to less than 800 pounds. For the month of April, there were but 1,282.60 pounds of mail matter handled through this field.

For the month of July, 1927, there were 10 routes in the United States that handled over 1,000 pounds of mail matter, while for the month of June there were 9 routes operated showing more than a thousand pounds of mail matter carried by the contract air mail lines.

AIR TRAFFIC LEADERS FORM ASSOCIATION

ORGANIZATION of the American Air Transport Association, comprised of all operators of commercial air lines in the United States, was effected at a conference in Chicago, August 5th.

Every individual or corporation engaged in the operation of commercial airplanes for the transport of either mail, passengers or express, is eligible to membership.

Harris M. Hanshue, president and general manager of Western Air Express, Inc., was the unanimous choice of the airline

operators as first president of this organization. T. Clifford Ball, operator of the Cleveland-Youngstown-Pittsburgh air route, was named vice-president and Willard G. Herron, vice-president and traffic manager of the Boeing Air Transport, Inc., was chosen secretary-treasurer.

These officers hail respectively from Los Angeles, Pittsburgh and San Francisco. Directors of the newly organized body include Colonel Paul Henderson, vice-president and general manager of National Air Transport, Inc., Chicago; George Tidmarsh of Washington, D. C., vice-president of Boeing Air Transport; Major William B. Robertson, St. Louis, head of Robertson Aircraft Corporation; G. S. Childs, vice-president and general manager of Pitcairn Aviation, Inc., Philadelphia; General John F. O'Ryan of New York, president and general manager of Colonial Air Transport, Inc., and Walter T. Varney of San Francisco, operator of the Salt Lake City, Utah, to Pasco, Washington, air route.

BIDS FOR AIR MAIL

THE following eight bidders contested for three new air mail routes, bids for which were opened in the office of Postmaster General New on August 18th:

Atlanta, Ga. to New Orleans, La., Via Birmingham and Mobile, Ala.

Bidder	Amount	No. & Type of Plane
Embry - Riddle Co., Cincinnati	\$2.91	5 (Whirlwind Waco); 3 in reserve.
Pitcairn Aviation Co., Phila.	2.47	3 (Pitcairn); 3 in reserve.
La. Airways, Inc., New Orleans	2.00	4 (Ryan & Hisso); 2 in reserve.
St. Tammany Gulf Coast Airways, New Orleans	1.75	5 (Waco & Fokker); 3 in reserve.
Arthur E. Cambas, New Orleans	2.95	4 (Douglas & 1 Seaplane); 2 in reserve.

Chicago, Illinois to Cincinnati, Ohio Via Indianapolis, Ind.

Bidder	Amount	No. & Type of Plane
Central Airways, Inc., Indianapolis	\$2.48	3 (Stinson); 1 in reserve.
Embry - Riddle Co., Cincinnati	1.47	4 (Whirlwind Waco); 2 in reserve.

St. Louis, Missouri to Memphis, Tennessee
Robertson Aircraft Corp'n, St. Louis.. \$3.00
8 (D. H. 4); 4 in reserve.

N.A.T. TAKES OVER N. Y. - CHICAGO ROUTE

THE National Air Transport Company will take over the running of the New York to Chicago air mail service, now operated by the Government, beginning September 1st. The route will be known as Number C. A. M. 17. Express will also be carried on this route.

Comparative Statement of Contact Air Mail Routes, May, June and July, 1927

Route number, termini and name of contractor	May		June		July	
	Pounds Carried	Pay of Contractor	Pounds Carried	Pay of Contractor	Pounds Carried	Pay of Contractor
CAM—1 Boston, Mass.-New York, N. Y. Colonial Air Transport, Inc.	1,590	\$ 4,770.19	2,603	\$ 7,809.37	2,222	\$ 6,667.50
CAM—2 Chicago, Ill.-St. Louis, Mo. Robertson Aircraft Corp.	2,363	5,980.24	3,856	9,760.03	2,940	7,441.87
CAM—3 Chicago, Ill.-Dallas, Tex. National Air Transport, Inc.	9,460	28,381.12	10,542	31,626.37	9,499	28,497.94
CAM—4 Salt Lake City, Utah-Los Angeles, Cal. Western Air Express, Inc.	15,213	45,639.00	17,120	51,360.56	17,390	52,171.12
CAM—5 Elko, Nev.-Pasco, Wash. Walter T. Varney	4,304	12,912.94	5,392	16,176.94	5,503	16,508.62
CAM—6 Detroit, Mich.-Cleveland, O. Ford Motor Co.	172	186.16	235	254.27	128	138.31
CAM—7 Detroit, Mich.-Chicago, Ill. Ford Motor Co.	913	985.57	982	1,060.76	1,063	1,148.17
CAM—8 Seattle, Wash.-Los Angeles, Cal. Pacific Air Transport, Inc.	5,325	15,042.53	6,131	17,342.88	6,708	19,033.82
CAM—9 Chicago, Ill.-Minneapolis, Minn. Northwest Airways, Inc.	2,157	5,931.23	2,730	7,506.98	2,505	6,887.89
CAM—11 Cleveland, O.-Pittsburgh, Pa. Clifford Ball	1,763	5,289.37	1,992	5,975.06	2,025	6,078.84
CAM—12 Cheyenne, Wyo.-Pueblo, Col. The Colorado Airways, Inc.	2,873	8,619.75	3,443	10,328.62	3,537	10,609.87
	46,133	\$133,738.10	55,026	\$159,201.84	53,521	\$155,183.95

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BOSTON AIR NEWS

By G. W. HAMBLIN

COMBINING forces with the annual New England Radio Exposition, the second aviation show in Boston since the World War will be held in the Mechanics Building September 26 to October 1st inclusive. Approved by the Aeronautical Chamber of Commerce of America, Inc., an impressive list of commercial airplane and parts manufacturers have taken exhibition space.

Planes to be shown will include the Hess, Waco, Travel Air, Driggs Dart, Swallow, Ryan, Consolidated, Vought, Stinson, Kinner and Douglas. Accessories include the famous "airrafts" used by Byrd and the crew of the "America", parachutes, airport floodlights, boundary lights, propellers, flying equipment, etc. Pratt and Whitney have taken space for their latest model "Wasp" and "Hornet" motors and Wright is expected to show a record-breaking "Whirlwind". Fairchild Aerial Surveys will be represented in the booth of Air Service of New England, Inc., their Boston agents. AERO DIGEST will have an attractive display and will have men on hand to assist exhibitors in any way possible.

Attendance at the annual radio show has averaged from 80,000 to 100,000 during each of the six annual shows since the war. With the addition of a whole exposition hall devoted to aviation it is expected to set a new attendance figure. Army searchlights will play into the sky from the hall by night. Daily demonstration flights will be made over the city from the Boston Airport. September 30th Assistant Secretary of Commerce William MacCracken will address an aviation banquet at the Hotel Statler to which, among others, will be invited the delegates to the aviation conference being held that day by the New England Council.

On Saturday before the aviation exposition a model airplane contest will be held on Boston Common, winning planes to be displayed at the show. A "flown cover contest" for air mail cancellation collectors will also feature the show.

Commander Richard E. Byrd has agreed to place a number of trophies of his North Pole and transatlantic flights in a booth at the exposition. Lieutenant Albert Hegenberger hopes to fly to Boston to personally direct the Army's display of aircraft and aircraft instruments.

The United States Navy has agreed to send two service planes and fifteen models of naval aircraft with photographs illustrating the development of flying in the Navy.

THE Boston Chamber of Commerce has begun to raise a prize of \$25,000 for the first flyer to land in Boston from Europe. Various dignitaries of Boston have been appointed trustees. Lieut. Comdr. Byrd and Lieut. Albert Hegenberger are among those appointed. To date, the fund is half raised, and will be completed before any of the boys overseas take off to fly westward for America.



A. L. MacClain, Boston Airport Corp.

THE Boston Airport Corporation, New England photographers for Fairchild, have done a lot of work around Eastern Massachusetts, making trips to Col. Green's new airdrome at South Dartmouth, Worcester, Lowell, where the proposed flying field is to be built, and North Chelmsford, to say nothing about innumerable photographic trips in the vicinity of Boston. Operations Manager Billings has added ten new members to the school roster again this month.

THE Boston Airport Corp. is called on for various uses of the airplanes it owns, but the first time one of the ships was used on an errand of mercy was August 5th, when Dr. Charles Sziklas, noted surgeon of Boston, came into the field with the request that he be flown to Nantucket on an emergency case. There was a four-year-old boy down there whose appendix had burst, and the only thing that would save him was the speedy arrival of Dr. Sziklas.

A. L. MacClain, instructor in the Corporation's school of flying, was detailed to take the doctor down in an OXX-6 Travel Air. At 6.15 p.m. the ship left, and an hour and forty minutes later was landing at Siasconset, where the Airport Corp. operates a field.

The operation was performed, and was successful, the doctor claiming that if it hadn't been for the use of the plane, the boy would have died. MacClain flew Sziklas back the next morning.

A STINSON-DETROITER biplane was sold to the Pioneer Instrument Co., of Brooklyn, N. Y., and Pioneer's Whirlwind Travel Air was taken in exchange. This Travel Air has a sort of national flavor, having won the Ford Reliability Tour in 1926, and having taken several prizes in the National Air Races at Philadelphia last Fall. The Corporation is using it for passenger hops and cross-country work, and may enter it in the New York to Spokane Air Derby.

THE persistence of fog at Nantucket during the past six weeks caused the discontinuance of the Boston-Nantucket Air line operated by the corporation.

TULSA AIR NEWS

By P. H. DIXON

PLANS for a \$500,000 aerial navigation company with headquarters in Tulsa and with the entire southwest included in its potential field of operation have been announced by Frank Matchett of the Exchange National bank of Tulsa. While organization of the new firm has not been completed, it is understood in Tulsa that ample financial backing is available for the venture.

The plan of operation of the new firm, according to Matchett, will be to inaugurate aerial transportation lines with planes running on regular schedule between Tulsa and St. Louis, Tulsa and Amarillo, Texas, and possibly lines to Dallas and Fort Worth, Texas, and Kansas City. Spur lines to oil production centers in the mid-continent field and special freight and passenger service out of Tulsa also will be included in the operation plan, Matchett said: Tulsa at the present time has no direct air mail connection with any of the large air mail lines.

The establishment of the aerial navigation company is expected to write an unusual page in the financial history of Tulsa. Closely associated with Matchett in the project is Col. P. J. Hurley, vice-president of the First Trust and Savings Bank of Tulsa, a subsidiary company of the First National Bank of Tulsa. The Exchange National Bank represented by Matchett and the First National Bank represented by Hurley long have been bitter rivals in southwestern financial circles.

ORGANIZATION of the Southwest Ryan Airlines, Inc., with a capital stock of \$25,000, has been completed in Tulsa, Okla. The firm has the Oklahoma agency for Ryan monoplanes. Delivery on the first plane is expected about September 15th.

R. F. Garland, Tulsa oil man and discoverer of the great Seminole oil pool, is president and main stockholder in the new company. John Wheeler, Tulsa attorney, is secretary. William T. Campbell, Tulsa, is vice-president and general manager.

PLANS for an international air meet in Bartlesville, Okla., some time in October are being worked out by Frank Phillips, Bartlesville oil man. Phillips was the financial backer of Art Goebel whose Travel Air plane "Woolaroc" won the Dole Hawaiian flight prize.

Phillips has announced that he personally will offer \$25,000 in cash prizes for contesting aviators and that cups and other trophies will be provided.

TESTS of aviation gasoline will be made in Tulsa at the International Petroleum Exposition, September 24 to October 1. The various fuels developed by natural gasoline manufacturers and refiners will be tried out on a calibrated test motor mounted on a block and by actual flying. The formula for the most efficient gasoline found after the tests have been completed will be made public in order that other refiners may develop similar fuels.

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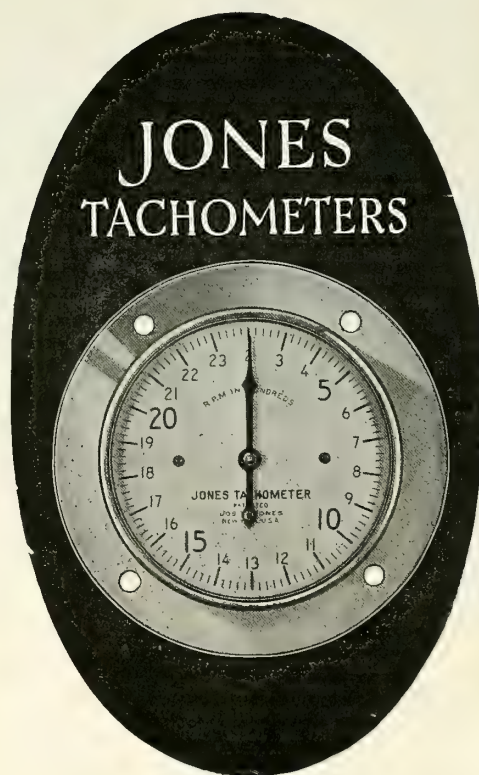
Policies have been written since 1912 and among others for Federal and State Governments, Boeing Air Transport, Inc., Colonial Air Transport, Inc., National Air Transport, Inc., Western Air Express, Inc., Robertson Aircraft Corp., Colorado Airways, Inc., Northwest Airways, Walter T. Varney, Inc., Southern Daring Co., Inc., Philadelphia Rapid Transit, Stout Air Services, Inc., Boston Airport Corp., American Railway Express, Ford Motor Company, Fairchild Aerial Surveys, Fairchild Flying Corp., Pacific Marine Airways, Pitcairn Aviation, Inc., Andian National Corp., United Cigar Stores Co., Royal Typewriter Co., Hamilton Maxwell, Inc., Pulitzer and other race meetings, Universal Motion Picture Corp., Fox Film Corp., The Daniel Guggenheim Fund for the Promotion of Aeronautics, Inc., and many others including Col. Charles A. Lindbergh and other leaders in aviation.

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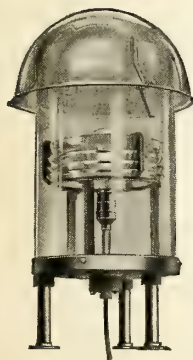
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DALLAS AIR NEWS

By MONT HURST

CONTRACTS for the new air mail lines between Dallas and Galveston and Dallas and Laredo have been secured by Seth Barwise of Ft. Worth. Mr. Barwise bid \$2.98 a pound for each line. The Dallas-Galveston line will include service to Houston, and the Dallas-Laredo line will include service to Waco, Austin, and San Antonio. It was first thought that Ft. Worth would be the northern terminus of the new lines but as Dallas is the southern terminus of the Chicago line it was thought best to avoid confusion and have the terminus here. It is planned to begin service in about three months. After the Dallas-Chicago line begins its night flying the two lines will be connected. It is expected that Mexican officials will soon start an air mail line from Laredo to Mexico City and the new line will give service in connection with that one.

A CROWD of 10,000 persons witnessed the unveiling on August 7th of the *Dallas Spirit*, Captain Bill Erwin's Swallow—Wright-motored monoplane in which he intended to fly from Dallas to Hong Kong for the Easterwood \$25,000 prize, and around the world.

Governor Dan Moody, who flew from Ft. Worth to Dallas for the event delivered the dedicatory address and Fred F. Florence was spokesman for the group of Dallas sponsors. Headed by Karl Hoblitzelle as president of the incorporated group, the sponsors associated with *The Dallas News* and *The Dallas Journal* are: Arthur L. Kramer, John W. Carpenter, Julius Schepps, C. R. Miller, Fred F. Florence, J. Perry Burrus, Phil T. Prather, W. H. L. McCourtie, Otto Herold, E. Gordon Perry and R. A. Crawford.

Colonel W. E. Easterwood, jr., donor of the Dallas-Hong Kong prize, Captain Erwin and his wife took part in the program.

BY early fall it is expected that three passenger-carrying airlines will be operating through the Southwest with Dallas the terminus of two of them. It has already been announced that the National Air Transport will put in operation a passenger service between Dallas and Chicago in September. Stops will be made at intervening points. Dallas will be on the Denver-New Orleans Line which will be put in operation within a couple of months. The latest announcement made by Jack Frye of the Aero Corporation of California upon his recent visit to Ft. Worth, is that Dallas will be the terminus of the Los Angeles-Dallas Line. Planes will run from Los Angeles to El Paso and other planes will be used on the El Paso-Dallas run. Stops will probably be made at El Paso, Breckenridge, Abilene, Sweetwater, Big Springs, Ft. Worth and Dallas.

DALLAS is to have an airplane factory. Organization is now being effected and a factory site will be chosen in the near future. Ernest R. Tennant, vice-president of the Dallas Trust and Savings bank, Col. William E. Easterwood, jr., donor of the \$25,000 Dallas-Hong-Kong flight prize, and others are behind the new company which will have a capitalization of at least a million dollars. An aviation engineer from Detroit is planning the new plane.

AIR EXPRESS SERVICE

BEGINNING September 1st, the following air mail routes in addition to carrying the mail will become express freight carriers for the American Railway Express Company:

Colonial Air Transport, New York-Boston route; National Air Transport, New York-Chicago and Chicago-Dallas routes. Boeing Air Transport, Chicago-San Francisco, and Western Air Express, Los Angeles-Salt Lake City, will carry express soon after the first of the month.

MIAMI AIR NEWS

By NORMA A. DAVIS

FORMAL possession of the site for a seaplane port on Causeway Island has been given to the city of Miami with the signing of a \$1 a year lease. The strip contains about three and one-half acres of land now being filled in. It is the first island east of the Miami mainland on the Venetian way.

GREATER Miami Airport association is now working toward the goal of municipal ownership of an international airport. The association, temporary officers of which were elected for two months at a meeting of city officials, aviation authorities and club leaders, has as its honorary president, Glenn H. Curtiss, pioneer aviator and inventor, and a resident of Miami. B. B. Freeland, member of the city aviation board, is president.

Directors include the mayors of the important cities of Dade county, presidents of the Chambers of Commerce, bankers, editors and prominent business men.

Gar Wood, nationally known speed boat racer and a winter president of Miami Beach whose brother is to attempt a transatlantic flight from London, Canada, to London, England, is one of the members.

FORMER service pilots in Miami are organizing the Miami Aviation club, a non-profit organization which has as its aims the instruction of prospective fliers and the promotion of the city's aeronautical interests. According to plans of K. W. Pratt and Lieut. Donald Davis, former naval fliers, Paul Latham, former marine corps pilot, and Captain Willingham, formerly of the army air corps, the aviation courses will lead to a club diploma and subsequently a pilot's license from the aviation branch, Department of Commerce. Small initiation fees will be charged. The club will begin its activities with seaplanes, later extending the instructions to land planes.

THE Miami Flying Club was organized recently at a meeting, directed by Ewing Easter, temporary chairman, and attended by former pilots of commercial, army and naval planes. The gathering included B. B. Freeland, president of the Greater Miami Airport association, and J. E. Yonge, chairman of the Miami air board.

OCALA FLYING FIELD

OCALA FLYING FIELD was established the first of the year by H. J. Chiddix and Freddie Lund. The field lies just one mile due west of the water tank in the city. This tank has OCALA set forth on a huge electric sign on three sides and is easily located. The Ocala Motor Company, local Ford dealer, has painted the word OCALA in large letters with an arrow pointing to the north on the roof of their building. The flying field is very popular with commercial pilots as it is the midway point between Jacksonville and Tampa. Gas, oil, and water can be secured at the field and expert repair service is available from town.



Love Field, Dallas, Texas, now the municipal airport.

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MILWAUKEE AIR NEWS

By H. H. STEELEY

"JUNK the flying crates."

That's the plan Milwaukee has under way to curb further accidents in which faulty planes have been to blame. Carl Herzfeld, chairman of the air service committee of the city, and Thomas F. Hamilton, airplane manufacturer, have plans completed whereby every aviator will cooperate with the city and county in doing away with unworthy planes. All pilots will be expected to be licensed before carrying passengers. Aviators here have agreed on the plan and about a dozen planes will be affected by the plan.

There is no law here to ban risky flying; but it is expected that every pilot will abide by an agreement with the city to take no risks. If this plan does not carry however, then officials will proceed to obtain county legislation forcing planes and pilots to be licensed.

FRED PABST, wealthy Milwaukeean, has offered an \$80,000 tract of land at Oconomowoc to the government as an emergency landing field for air mail purposes at a rental of \$1 a year. Mr. Pabst also has offered to defray the expenses in the erection of a giant air beacon on the field.

SO rapid has been the growth of aviation in Milwaukee in the last few months, and especially since the reception of Lieut. Lester Maitland and Lieut. Albert Hegenberger, of Pacific flight fame, that the city has decided on the organization of an air board. This board will be composed of men actively interested in aeronautics and experienced as flyers to pass on air regulations the city and county proposes for the future and to supervise the operations of the county and municipal airport.

Milwaukee has formally opened its lake front airport and it has been named Maitland Field in honor of the Pacific flight hero, who was born and reared here. The field is on the lake front seven blocks from the heart of the city and within four blocks of the post-office. It has two runways, one running east and west and the other north and south. More land will be added when the shore line is filled in by the first of next year. It is expected that Dan Kiser, former air mail pilot and airplane manufacturer, will be in charge of the airport. Steel hangars are now under construction.

SEVERAL flying organizations have sprung up here in the last two months, some formed for the purpose of teaching flying and providing aerial taxis while others permit former flyers, through a contribution or assessment, to keep their hand in at the stick. The Phoenix Aircraft Corp. has purchased a Hess Bluebird and has engaged Frank Kohaust as pilot. This organization will do air taxi work and instruct student flyers. The Milwaukee Air Transit operates a Canuck and Swallow planes with C. C. Chamberlain and Lester Holubeck as pilots. This outfit also instructs in flying and carries on aerial photographic work as well as passenger service to any point in the state. The



F. W. Dalrymple, pres. Atlantic Airways.

Milwaukee Fliers, Inc., has been organized with an exclusive membership of ten, each of the members being flyers or former flyers. With a Canuck plane these men fly for their own enjoyment only.

THE Alonzo Cudworth post of the American Legion is sponsoring a statewide air tour for the first of September, which will take a flight of twelve planes to the leading cities and towns of Wisconsin to promote aerial education. Each of the planes will represent an industry of Milwaukee. The tour will last about three weeks. Lieut. Lester J. Maitland and Maj. Herbert A. Dargue, Pan-American flight commander, have endorsed the tour and commended its object.

SO successful has the Hamilton all-metal monoplane proven itself, having placed second in the Ford Reliability tour, that Thomas F. Hamilton, its manufacturer and president of the Hamilton Metalplane Company, is now laying the path to manufacture these planes at a selling price of about \$15,000. At the same time it is expected he will move his factory to Detroit, having failed to gain financial support here. Removal of this factory necessarily will force removal of the Hamilton propeller factory also. The metal plane "Maiden Milwaukee," which took part in the Ford tour, has been equipped with pontoons for experiments on the lake here. Randolph Page, veteran air-mail pilot, is chief pilot for Hamilton.

THE Northwest Airways, Inc., of St. Paul, operating the Twin Cities-Chicago air mail route, has inaugurated passenger service in conjunction with its mail flights and Col. L. H. Brittin, general manager, has announced that the number of passengers carried so far have far exceeded expectations. The fare from Minneapolis to Chicago is \$40, with proportionate fares to St. Paul, La Crosse and Milwaukee. The company expects to open up a passenger service between St. Paul and Duluth this fall. Charles "Speed" Holman is chief pilot. The company is using Stinson-Detroit planes.

ATLANTIC AIRWAYS FLYING COURSE

THE flying course offered by the Atlantic Airways, New Rochelle, N. Y. is thorough and comprehensive. It is patterned primarily after the Navy Course at Pensacola, but, in its adaption to civilian needs, the purely military subjects have been omitted. Flight instruction is worked out on a schedule based on the assumption that the average student will be ready for "solo" flight after eight hours of dual instruction. The plan is elastic, however, and every student is treated individually.

At first the lessons are of 30-minute periods. As the student becomes accustomed to the air the time is increased—but never for longer than 60 minutes. The student always has the same instructor who is constantly on the watch for signs of fatigue and who immediately will end the lesson for the day should the student become dull and unresponsive. After each lesson the student enters his time in his individual log book which is certified by the instructor.

The school operates only equipment licensed by the Department of Commerce and all of the instructors hold transport licenses according to law. Therefore, before enrolling, a student must pass a physical examination before a surgeon designated by the Department of Commerce and file an application for a student pilot's license.

A ground course is run in conjunction with the flying course so that the prospective pilot will know not only the necessary field routine but also have the necessary knowledge of planes and engines to pass the theoretical part of his pilot's license examination.

A course also is provided for the business man, which is arranged so that instruction can be given outside of business hours.

The equipment of the Atlantic Airways consists of new Alexander Eaglerock planes.

VAN LEAR BLACK'S EAST INDIAN TOUR

MR. VAN LEAR BLACK, proprietor of *The Baltimore Sun*, ended his tour of Dutch East India on his arrival at Amsterdam on July 25th.

Leaving Amsterdam on June 15th in a K.L.M. airliner, piloted by the Dutch airman Geysendorfer and Scholte and accompanied by his valet, Mr. Black flew via Constantinople, Aleppo, Baghdad, the Persian Gulf, Karachi, Allahabad, Calcutta, Rangoon and Singapore and arrived at Batavia after 86 hours of flying on June 30th.

He flew only thirteen of the sixteen elapsed days, being held up by Turkish officials at Constantinople one day, because the Turks don't allow flying on their Sunday, and delayed two days at Baghdad by dust storms.

The whole tour of 18,600 miles was completed in 200 flying hours. At Amsterdam he was greeted by a crowd of 15,000, and later Mr. Black was made a Knight of the Order of Orange and Nassau.

An illustration showing Mr. Black and his pilots on their arrival in Amsterdam is on page 363 of this issue.

(Continued from page 282)

from Bremen. Kaulen holds the world's long from Bremen. Kaulen holds the world's long distance flight record, made in 1913, when he with two passengers covered 1,865 miles.

Great Britain will have three pilots in the basket of the single entry. They are Squadron Leader R. S. Booth, Captain G. F. Meager and Reserve Flight Lieutenant M. H. Steff. The balloon that will represent Great Britain is known as "The Bee." It is of 80,000 cubic feet capacity and was piloted in the 1926 contest by Captain Meager. Lieutenant Steff was second pilot representing England in that event and Flight Leader Booth was the officer responsible for the return of the R-33 when it broke loose and drifted over the North Sea.

Majors Molas and Maldonado will represent Spain in a German made balloon, the property of the Aero Club of Madrid. This is the first contest sponsored by the Aero Club of Madrid, the Spanish Government being the official sponsor in the other races.

Maldonado is well known in the United States, having studied for two years in an American army dirigible training school. He is an engineer in the army. Molas is a licensed balloon pilot attached to the artillery service of the army and an expert airplane observer. He has taken part in many contests in Spain and abroad.

De Muyter, four times a winner of the Gordon Bennett Cup and permanent possessor of the first Gordon Bennett trophy, will represent Belgium.

Hon. Henry S. Hulbert, presiding judge

of the Probate Court, is chairman of the Gordon Bennett Committee of 1927. Other members of this body include Hon. Charles B. Warren, ex-Ambassador to Japan, Edsel B. Ford, Hayward Murphy, Phelps Newberry, Thomas S. Merrill, Colonel Sidney D. Waldon, William B. Mayo, Carl B. Fritsche, Charles A. Parcels, William P. Harris, Harold H. Emmons, William B. Stout, J. W. Batton, Charles R. Talbot, John M. Stalker, A. C. Vose, L. K. Marshall, Ralph H. Upson, Norman B. Conger, Harvey Campbell, Alfred C. Verville, Charles D. Williams and Karl S. Betts. Ray Cooper, manager of the 1927 National Air Tour, is the general manager.

Assistant Secretary William P. MacCracken of the Department of Commerce, Assistant Secretary Trubee Davison of the War Department and Assistant Secretary Edward Warner of the Navy Department have been selected as judges for this year's race.

NEW DISTRIBUTORS FOR AMERICAN EAGLE CO.

THE American Eagle Aircraft Corporation are rapidly adding to their list of distributors throughout the country. Six months ago this company ranked seventeenth in production—they report that to-day they rank third. The following distributors have been appointed to handle the American Eagle: Fred E. Pereira, Chelsea, Mass., for Maine and Massachusetts; American Eagle Aircraft Distributors, Inc., Brooklyn, N. Y., for New York, New Jersey, Connecticut, and Pennsylvania; J. D. Winstead,

Rocky Mount, N. C., for North Carolina; Chicago Aeronautical Service, Inc., Chicago, Ill., for Northern Illinois and Southeastern Wisconsin; Mason City Airways, Inc., Mason City, Iowa, for Eastern Iowa and Southeastern Minnesota; Minnesota Air Service, St. Paul, Minn., for Western Minnesota and part of North and South Dakota; Adolph Johnson, Freemond, S. Dak., for part of South Dakota; L. M. Tucker, Detroit, Mich., for part of Michigan; Ralph S. Seney, Buffalo, Wyo., for Northeastern Wyoming; Geo. L. Swank, St. Mary's, Kan., for part of Kansas; Hancock and Fleming, San Mateo, Calif., for California.

ELMIRA AIRPORT

EXTENSIVE dedication ceremonies will mark the official opening of the Elmira Airport, which will include many aeronautical features during the two-day program on September 11th and 12th.

Thea Rasche, German aviatrix, now visiting America in the interests of flying progress, will take an important part in the program. Bert Acosta, pioneer pilot, and joint holder with Clarence Chamberlin of the American endurance record in air, is also scheduled to participate.

The Elmira Airport, which already has been used for landing and take-off purposes, is 120 acres in extent and includes two 3500 feet runways of modern construction. A sixteen plane hangar provides ample facilities for storage and housing. The field was designed and constructed by William E. Arthur & Co., Inc. of New York City.

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THE High Intensity Arc is the most efficient source of light known. A 5500-watt Arc in an 18" projector with an 80° spread lens produces a fan of light of 1,000,000 candle power. Two of the lights together give 160° spread of light.

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AIR MAIL CONFERENCE

A DEFINITE program outlining America's position in regard to the handling and treatment of international air mail has been mapped out and will be presented to the Air Mail Conference called by the International Bureau of the Universal Postal Union when it convenes at The Hague on September 1.

America will be represented at the conference by W. Irving Glover, Second Assistant Postmaster General, and R. Eugene White, Superintendent of Foreign Mails of the Post Office Department.

The United States will advocate, among other things, uniform postage and transit rates and transportation charges with all countries having air mail service, the transit rates to be based on a zoning system using units of one thousand miles or less.

Until such time as aircraft is able to make regular and dependable trips across the ocean, it will propose shore-to-ship and ship-to-shore service based on the service now in operation in the United States out of Seattle and New Orleans.

The American delegates also will propose a combination of the special delivery and airplane services by which all air mail letters would be given special delivery service, and will ask for the adoption by all countries of a uniform color or distinguishing mark for air mail stamps.

The questions to be considered at the conference relate to postage rates, transportation charges, and transit rates across intervening countries, conditions of mailability such as size, weight, packing, etc., responsibility in the case of loss, damage, etc., the simplification of accounting, and possibilities for the improvement of service.

IMPROVED GOGGLES

DEVELOPMENT of new eye protection devices designed to keep pace with improvements in aviation, increased speeds, and optical refinements to precision requirements have been reported by Strauss & Buegeleisen.

Their new RAV goggles, sponge rubber bound replacing chenilles in fabric types, have met with big success and are now in use in aviation fields as far away as Japan, Australia and India.

Another new development is the Commander type, a recent refinement embodying features based on the experiences of naval aviators, the precision requirements of naval engineers and laboratory officials. The lenses are decentered, compensated curve meniscus optically ground and polished to a definite curve affording complete vision. The ventilation is by a French system, invented in 1921 by a leading French aviator in collaboration with Mr. Buegeleisen.

The meniscus lense of the same weight, thickness and the identical optical precision, used in the Commander goggles is also supplied in Nonshatterable Resistal. Aero is another type of metal frame with curved bent optically ground or Resistal optically ground lenses. Pilot is another very satisfactory goggle, furnished at present with bent lenses only.

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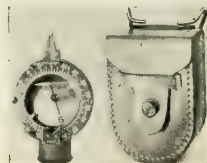
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COLBY IN AIR DERBY

THOMAS B. COLBY, manager of Berry Brothers' aviation and marine department, will fly in his new Waco-10 biplane in the New York-Spokane Air Derby.

Young Colby is a son of F. L. Colby, president of Berry Brothers, and a grandson of Thomas Berry, one of the founders.

So far as is known, he is the first Detroit sales manager to purchase an airplane for business transportation purposes. The craft will be used by him in covering his sales territory.

"We believe in the future of aviation," he said. "The demand for high-grade aircraft finishes is increasing rapidly. My department is now selling 95% of the commercial aircraft manufacturers in America.

"Flying is far more than a sport. It is fast becoming an economic necessity. An airplane enables one salesman to do the work of four or five.

"The United States is my territory. With an airplane I can easily cover it alone. Otherwise several men would be needed.

"I am entering the National Air Derby merely for the sport of it. Charles W. Meyers, chief test pilot of the Advance Aircraft Company, will fly the plane and I shall go along as a passenger. After we reach Spokane we will cover the Pacific Coast, calling on customers."

NATIONAL AIR RACES

(Continued from page 280)

San Francisco, Calif.; Mohme Aero Engineering Corporation, New Brunswick, N. J.; L. B. Colby, Detroit, Mich.; R. E. Dake, Pittsburgh, Pa.; R. H. Hoffman, Moline, Ill.; E. K. Campbell, Moline, Ill.; Harold A. Danne, New York, N. Y.; C. B. McMahon, Miles City, Mont.; B. L. Whelan, Dayton, Ohio; Emil H. Burgin, Mineola, N. Y.; Pitcairn Aviation, Philadelphia, Pa.; A. E. Fannin, Clayton, N. Y.; Thomas Colby, Detroit, Mich.; Edward G. Knapp, Ypsilanti, Mich.; L. Royal, Detroit, Mich.; John Paul Riddle, Cincinnati, Ohio.

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Oakland and San Francisco" race at the conclusion of the National Air Races on September 24th, have been started by Major John T. Fancher, managing director of the National Air Derby Association of Spokane, as these cities are anxious to have the races as part of their programs for the dedication of their ports. Walter Evans is president of the National Air Derby Association and Ellsworth C. French, publicity director.

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"COLUMBIA"

"AMERICA"

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FOKKER ARMY PLANE
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TELLING THE WORLD

RUSSELL QWEN
New York Times

RUSSELL OWEN went on the old *Sun*, in 1906, when he was 17. He covered every district, police court and department in the city in the next thirteen years, the usual busy routine of a cub reporter learning the ropes. In 1919 he was bitten with the desire to live in the country and took charge of a country daily for three disillusioning months. Then back to New York, and after a year at publicity, went to work on *The New York Times*. After three years the city again palled, and he went to Schenectady to edit a magazine for the General Electric Company. A year and a half spent at that, and the desire to be a reporter was again too much, so he returned to the *Times*. Since then he has covered the Shepherd murder trial in Chicago, the famous evolution trial at Dayton, Tenn., the Byrd and Amundsen polar expeditions at Spitzbergen, ten degrees from the North Pole, and most of the aviation events in the east. He writes a regular Sunday column on aviation in the *Times*.

Some record and some writer!

No Congressional honors, medals or banquets. Still they are playing an important part in advancing aeronautics. They are educating the reading public to the values of aviation. We want you to know them—a few of the aviation representatives of our daily press!

FRANCIS D. WALTON
New York Herald Tribune

FRANCIS D. WALTON was born at Manila, P. I., July 12, 1902. Educated public schools of California and Boston, Mass., and finished off with the utmost rapidity in two years at Harvard. First newspaper work on old *Tribune*, 1919; later with the Associated Press, New York office, where he bore as well as possible the ignominy of being the youngest wire editor which that service ever tolerated. Later with Eastman at Rochester, where, it might be said, he was mildly interested in the problems of aerial photography. Returned to *Herald Tribune* 1924. First important air assignment National Air Races, 1925, and has covered 'em all ever since for the *Tribune*. In fact it took Walton's efforts to convince the "Trib" that air news was news.

JAMES V. PIERSOL
Detroit News

JAMES PIERSOL, following war service, operated his own commercial planes at Minneapolis in 1919. He also lectured and wrote on aviation, contributing features to magazines and news syndicates. As a pilot, he has flown fourteen different types of land and water craft for a total of more than 1,000 hours. He was instrumental in the establishment of the airport at Kalamazoo, Mich., the first municipal port in the State, in 1925. He was on the *Kalamazoo Gazette* a year before coming to the *News* last January as aviation editor. In the Sunday editions of the *News* his columns are headed "Propeller Tips." Talks like a pilot and writes—like a "vet."

CARL B. ALLEN
New York World

C. B. ALLEN quit West Virginia University to enlist in Aviation Section, Signal Corps, December, 1917, advanced flying courses at Taliaferro Field, Hicks, Tex., and Langley Field, Va., ending war at the Siege



Russell Owen, N. Y. Times; Francis Walton, N. Y. Herald Tribune; Jas. Piersol, Detroit News; C. B. Allen, N. Y. World; Chas. McLean, N. Y. American; Bruce Gould, N. Y. Evening Post; Hugh White, Detroit Free Press; Frank Bogart, Detroit Times.

of New York on overseas orders. He is now First Lieutenant in the Air Reserve on flying status and what-not. Took up newspaper work after war on *Cincinnati Commercial Tribune*, resigning as assistant city editor three or four years ago to join the *World* although the latter newspaper was in blissful ignorance of the scheme. Began to be tolerated reluctantly by the higher-ups when Al Williams and Hal Brow battled for the speed championship of the world one memorable Sunday afternoon when the subject of this sketch was covering for the regular reporter and nothing was expected to happen. This story later picked for Joseph Anthony's collection of Best News Stories of 1923. Covered arrival of World Flyers in Pictou, Nova Scotia, being the only correspondent to meet planes in a flying boat far up the Gulf of St. Lawrence; this story included in the Anthony collection for 1924. Covered first Ford Tour in the plane Byrd later flew to the North Pole; handled 1925 and 1926 National Air Races and Schneider Cup Races, and Lindbergh's take-off, and is still optimistic over the "infant industry." He knows his stuff.

CHARLES McLEAN
New York American

CHARLES McLEAN, aviation writer for the *New York American*—though Mac insists it is reporter—has been interested in aeronautics since the days of the old "pushers" types. His first experience, however, was during the war. He is a graduate of S. M. A., Austin, Texas, Squadron 57, and

finished his training at Kelly Field in 1918.

He has been with the Richmond, Virginia, *Times Dispatch*, and Hearst's *Atlanta Georgian*. The *American*, however, was the first paper on which he has been assigned exclusively to aviation.

"Mac" believes that aviation in future will surpass the greatest dreams of designers, and for that reason expects to continue writing aeronautical news for the Hearst papers. The romance, he says, will always be "in the air," although the business now is purely commercial.

BRUCE GOULD
New York Evening Post

BRUCE GOULD became an Ensign in the U. S. Naval Reserve Force in the late war, acquiring his pilot's license during that period. After that he returned to college long enough to obtain a sheepskin and then fell in with a wandering band of newspapermen. In New York he has worked on the *Sun* and the *Post* for the last five years. While covering all the important aviation events for the *Post*, he has never permitted anyone to call him either the aviation editor, nor the aviation expert, nor does he answer to either title. By dint of much striving he has gotten the *Post* to only infrequently blame an airplane accident on an "air pocket." He can write a dramatic criticism, book review, color story, murder mystery, Wall Street story and half a dozen other kind of stories almost as well as an aviation yarn, and does a bit of flying himself. His chief support most of the time is a cane.

HUGH WHITE
Detroit Free Press

HUGH C. WHITE, of the *Detroit Free Press*, handles aviation news for Detroit's morning newspaper. White, who is 25 years old, hails from Pennsylvania and had his first flying experience over the Allegheny mountains several years ago. His interest in aviation, continued through newspaper work, finally gained him an assignment to the "aerial beat" on the *Free Press*. In addition to writing the daily happenings he also conducts a Sunday column under the heading of "Sky Traffic." He is Detroit's "cub" aeronautic writer but with barrels of experience.

FRANK BOGART
Detroit Times

FRANK BOGART has been writing aviation news on the *Detroit Times* since January, 1925, when, in the ordinary newspaper office routine he received his first "air assignment" quite by chance. It was to accompany the First Pursuit Group, U. S. A. C., from Selfridge Field, Mich., to Oscoda, Mich., for their annual winter encampment and maneuvers. In 1925 and 1926 he flew both the pathfinder and main tours in the Ford reliability competitions, and covered the 4,300-mile route of this year's tour, bringing his total air miles traveled to more than 20,000 miles. He conducts a Sunday department of aviation under the heading "Aerograms" and says his hardest work now is getting his monthly AERO DIGEST news in New York on time.

Air Propelled The Whistler Goes Anywhere



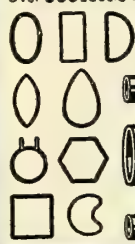
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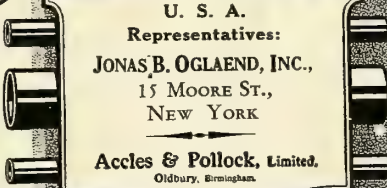
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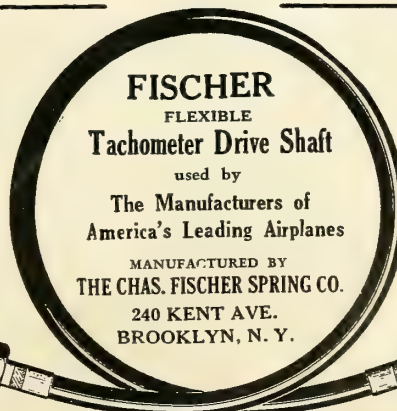
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AERO DIGEST will award a prize of \$5 each month for the best humorous contribution published. Only those pertaining to the aircraft field will be considered. Address the "Picked From The Air" Department, Aero Digest, 220 West 42nd Street, New York, N. Y.

Kenneth D. Stern, St. Louis, Missouri, won the prize for August.

A flying drunk is hailed into air traffic court.

Judge: "What are the charges against this man?"

Officer: "Reckless flying, piloting a plane while intoxicated, loitering about the sky, and creating a public nuisance by bad landing, sor."

Judge: "And what have you to say about all this, my man?"

Culprit (swaying uneasily in the breeze): "'Salladamnie, yurhonner. Jush skywritin'."

"We," an Interpretative Composition

("James Philip Dunn, composer, has written an orchestral composition interpreting the Lindbergh flight."—*News item*.)

The opening movement, largely by wind instruments, indicates the gathering of noted aviators on Long Island for the Paris flight. There is a violent outburst by the kettledrums, denoting quarrels, arguments, threats, injunctions, resignations and delays. The piccolo players render "Clap Hands, Here Comes Charlie," portraying the arrival of Slim Lindbergh at the Long Island field unheralded and alone.

* * *

A lone violinist saws away on one string, indicating in a highly effective manner the slicing of three ham sandwiches, which disposes of the rumor Levine is to fly with him. The entire orchestra breaks into a crescendo movement, signifying that Lindy has hopped off. There follows a confused medley, interpretative of the difference of opinion as to whether Slim will make it or not.

* * *

The droning of a miniature motor operated by the snare drummer portrays the flight across the seas, and there is a violent movement among the harps as indicating the incident where Lindy, flying over the unmis-

takeably beautiful hills of Erin, asked the two fishermen: "Is this Ireland?"

* * *

A medley of national airs indicates the arrival of Lindy in Paris, and the sharp snapping of several violin strings registers the fact he has already been kissed by six French Generals.

* * *

There is a wholly insane and incomprehensible movement by the entire orchestra, indicating that the news of Lindy's arrival has reached the United States and that the nation has gone goofy. Here occurs a wild outbreak by the bull fiddles portraying the removal of 456 American newspaper editors in straitjackets.

* * *

The oboes play "Yes, We Have No Pajamas" as indicating that incident in Lindy's life, and there is a rather swift movement by the reed instruments, showing the frenzied search for a pair. This interlude ends with "Sleep, Little One, Sleep," and "Three Cheers for the Red, White and Blue."

* * *

Here the snare drummer fires five shots from a revolver, turns a handspring, rings a cowbell and imitates the call of the cuckoo. This portrays as nothing else could increasing irresponsibility throughout America, the



"You're fulla hops."
"So's your old Atlantic Ocean!"

—Goblin.

arrest of 300 poets as public nuisances and the running amuck of several thousand public speakers, reception committee members, mayors, cabinet officers, editorial writers, etc. Here occur a tooting of steam whistles and a deafening jingling of old metal, indicating quite neatly the opening of 188 new medal casting factories between the Mississippi and the Atlantic seaboard alone.

* * *

At this point the use of several naval numbers indicates the return of Lindy by warship. Then, abruptly, each member of the orchestra goes berserk, playing anything that comes to his mind and playing it without any regard for tonal qualities. A saxophone player assaults a violinist, three cornet players attack the leader with chairs, the bull fiddlers jump head first through the kettledrums and the rest of the orchestra romp around the stage shouting "Block that punt!" This indicates Lindy's reception back home, the collapse of 256 women in the mob, the dumping of 5,670 tons of confetti, the revolt of the street cleaners and the release of about four dozen pretty terrible speeches.

* * *

The composition closes with a rather chaotic movement interpreting as nearly as possible Lindy's refusal of a million dollars in picture contracts and the collapse of the movie magnates from shock.

—H. I. Phillips.

Courtesy of the New York Sun.

It is funny none of the ocean flyers has shaved en route, considering the splendid facilities to get rid of the used blade.

—Detroit News.

Europe seems to be willing to let America take the lead in transatlantic flying. That's one way we get more tourists over.

—Florida Times-Union.

If it keeps on, the parking of American airplanes will become another of Europe's troubles.

—Columbus Dispatch.

There's one nice thing about airplane travel. The roar of the motor drowns any comment from the back seat.

—Publishers Syndicate.

Greater than
all others
combined!

THE sworn circulation statement of AERO DIGEST for six months ending June 30th, shows a total distribution greater than the *combined* circulation of all aeronautical publications in the United States.

Average net paid circulation for six months ending June 30th, 1927 **26,363**

Average total distribution for six months ending June 30th, 1927 **27,283**

Note — since June 30th circulation has increased by more than 3,000

These *sworn* circulation figures will be published in the Standard Rate and Data Service—the national authority.

MORE ADVERTISERS USE AERO DIGEST BECAUSE IT IS READ WHERE IT GETS RESULTS!

AERO DIGEST

THE MAGAZINE OF THE AIR

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Byrd's Trans-Atlantic Plane Used Belden Shielded Cables

ONLY proven materials were used in Byrd's giant Fokker "America"; hence it is not surprising that Belden Radio Shielded Wire was used throughout for starting, heating, power, and all other low-tension service.

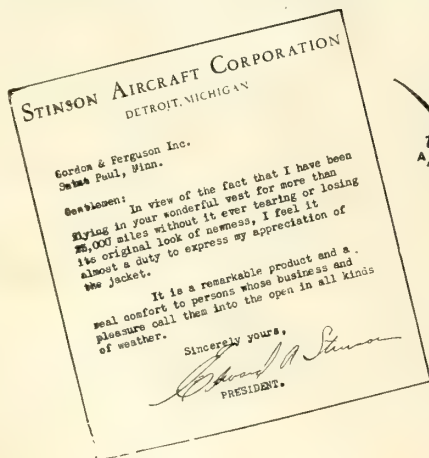
It is significant evidence of Belden reliability that most all record making planes have been equipped with Belden wire and cable. *Write for data.*

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A NOD AND A WINK

(Continued from page 270)

Paris air service than any aircraft we have to-day is fitted to undertake the New York-Paris service. Bleriot's plane had to evolve into the present types before a real airline between London and Paris was practicable; and the present types will have to evolve into something much superior to anything we have to-day before a New York-Paris line will be a reality.

The trans-ocean airline is yet in the engineering laboratory—unless Mr. Rumpler has dug it out. I'm very hopeful about Herr Rumpler. I think he's on the right track with that flying-wing idea. And I shall continue to think so, even if his first giant plane is a failure. He is to be congratulated for digging in to something different. Which is precisely what the designer of the future must do; he must find out something that hasn't been found out yet before aircraft will cross oceans in all sorts of weather as steamships do now.

But, I hear you growl, why is this bozo handing out his nit-witted opinions on trans-ocean airlines? He hasn't flown across an ocean. I know I haven't; and I don't intend to—on one engine. I haven't laid an egg, either. But I don't have to be able to lay an egg in order to analyze it. As I see it, these various great flights are no more than eggs containing the fertile germ of an idea. They've got to be hatched out in the engineering and financial laboratories of the world—don't overlook the financial end of it—and from these eggs will come chicks which will develop, eventually, into long-distance flying birds—birds that will tuck their feet up under them and just go sailing over anything and through all sorts of weather, and only alight when and where they want to. They won't crash taking off, or get lost and land in the sea, or have to wait weeks for favorable weather, or be front page news when they get anywhere; in short, they'll be a vastly different sort of bird to those we have with us to-day.

FOR the benefit of anyone who purposes starting a transatlantic airline with stop-over privileges in Newfoundland, I rise to remark in a hoarse, fog-roughened whisper that Newfoundland offers no privileges to an airplane, and mighty few to a seaplane. The prospective airline operator is solemnly advised to park himself aboard a seaplane and spend a year flying around Newfoundland—when the weather will let him fly, which will be possibly one third of the time. I think he'll save himself a lot of money on his airline. All he'll be out will be his time—and possibly one seaplane.

Newfoundland may be used as an intermediate stop for a line between New York and Paris and London. But the country must be studied; and no airline must depend upon one or two bases. Newfoundland is invariably suffering from a dose of fog. But when the South and East coasts are foggy, the West is clear. When the South is hidden in fog, the North is clear. There must be three or four bases where airplanes or boats may stop to refuel—and all must be equipped with directional wireless and lights. Even when all of that is done, the airline is up against the North Atlantic winter weather—to say nothing of the summer weather—when there are days and even weeks at a time when attempting to fly the Atlantic in any such aircraft as we know to-day would be a hopelessly hazardous and fool-hardy proceeding.

CONGRATULATIONS to the German transatlantic pilots for their display of sound judgment in turning back in the face of impossible weather conditions.

They can always take off and try it again from Dessau. And it's practically impossible to take off from mid-Atlantic in a land plane. The German people were worried for fear other nations would be laughing at their failure; but nobody laughed. The failure of man to overcome insurmountable obstacles placed in his path by Nature is never funny. Frenchmen or Englishmen or Americans, facing the conditions that confronted the Germans, also would have turned back—or landed in the Atlantic. Friends, to your better fortune—*Prosit!*

A SUIT of fluted Maximilian armor dating A.D.1515 was sold in New York for \$4,750. The purchaser is unknown, but it is surmised that he was a General Staff officer providing himself with what he deemed to be the latest air-raid protective clothing.

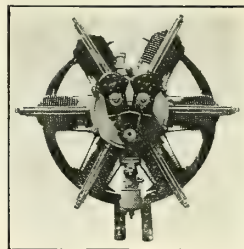
D R. ROCHS, formerly one of the chiefs of the German war-time army's medical corps, states that hardening of the arteries and other maladies of high officers caused Germany to lose the battle of the Marne. Von Moltke, Chief of Operations on the General Staff, was suffering from such an acute form of hardening of the arteries that he couldn't get nearer the front than 200 miles; he died six months later from the malady. Von Buelow suffered from the same trouble, and failed to show the good judgment he had displayed in his younger years. General von Lauenstein, another important officer in the Marne battle, suffered from heart cramps, while Lieut. Col. Hentsch was afflicted with gall-stones. These four men all died from maladies from which they were suffering when trying to direct the armies on the Marne. Had they been healthy, or had they been replaced by younger men, the history of that battle might have been different.

Hardening of the arteries and other maladies of old age is probably what has paralyzed the thinking powers of our own General Staff. Something has paralyzed them, and there isn't a doubt of that. And it's more charitable to blame it on physical decay, due to advancing age, than it is to blame it on natural pig-headedness, which it very possibly may be. But there's a limit to our charity. We can't keep on indefinitely blaming hardening of the arteries for their stubborn reluctance to accept the airplane as the world's most powerful weapon for use in warfare, either defensive or offensive. That would be playing it too low-down on a disease that may, after all, prove of benefit to America by removing these fossils. But we will blame hardening of the arteries if it doesn't get a move on itself and petrify those arteries completely, and thus clear the field for a younger crew of General Staff officers whose arteries may be more pliable—especially those arteries which carry nourishment to the brain.

THE Fascisti have renamed Mont Blanc for Mussolini. That mountain will have to get a hustle on itself now, and erupt, or something, in order to live up to its name. Vesuvius had been quiet for some time, until Mussolini visited it; it became active at once. And the Italian Air Force was a force only in name until the "Duce" took it in hand. He's a wonderful man—he might even be able to shake some life into the N. A. A. Still, I suppose there's a limit even to what Mussolini can do.

I SEE where Colonel Lindbergh's flight has been set to music in a symphony called "We." The composition, says the composer, is "an utterance in music of the courage, perseverance and will power of Colonel Lindbergh."

ANZANI



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The "V" type watercooled engine has served its purpose but in commercial aeroplanes its sun has set. You know this, so why try to bluff yourself into thinking that you can meet the conditions of today and tomorrow with the engine of yesterday?

We are now supplying this trade with the famous French Anzani engine and by midwinter will have the new American-built engine in production in 35-40, 70-80 and 120 h.p. A most worthy successor to a famous forebearer.

Many engines are now spoken for and to insure a prompt delivery schedule orders must be placed now so that future production can be arranged in sufficient volume to meet the demand.

H. L. BROWNBACK
NORRISTOWN, PA.

This gives me an idea. I am starting work at once on a musical composition called "Bumpitty-Bump-Bump-Bang!" It is an utterance in music of the marvelous stupidity, lack of adaptability, and general bone-headedness of the average pupil of a flying school. It is dedicated, in all sympathy, to the flying instructors of America. It's just full of crash notes.

THAT Doleful Air Derby across the Pacific has ended in success for two of the entries, and in disappointment, disaster, or death for the other eleven entries. True, it advertised aviation—and a can of pineapples. But was it worth it? I do not think so. And with the quotation that "any advertising is good advertising—even bad advertising," I do not agree.

Fortunately for aviation, the human mind remembers success and forgets failure, a most merciful dispensation. That Goebel and Jehsen reached Honolulu will be remembered; that others crashed and were killed, or died in the ocean, will be forgotten. And aviation will forge ahead in the future as it has forged ahead in the past, profiting, let us hope, from the lessons taught by this Dolorous Derby.

The lessons are plain to see. No experimental airplane should be allowed to enter any event until its plans and specifications have been approved by the Department of Commerce, and until the plane has been properly and thoroughly tested—and not before a crowd numbering thousands of people who are waiting to see that plane take off on a long-distance flight. It should be tested on the builder's home field, without advance publicity, for a new type of plane is an experiment and much may be the matter with it—just as much may be the matter with a new type of auto-

mobile. You do not see a motor car company testing a new car before thousands—until they have first tested it very thoroughly themselves, privately. If this sensible course is followed by airplane builders a crowd of thousands of people, including newspaper men who are there to flash to the world everything that happens, will not be given the spectacle of planes uncontrollable in the air, so that they have to be crashed into the sea; of planes from which the wings fall off; of planes whose fuel systems fail to function and whose motors develop installation faults; of planes which fail to carry their contest load successfully, and crash on the take-off.

Major Clarence M. Young, of the Department of Commerce, is to be congratulated on his capable handling of an almost hopeless situation—the frantic rushing to the starting-line for a 2,400-mile flight of planes, some of which never should have left the builders' hands until after they had flown hours past the experimental stage.

And finally, we come to the wisdom or folly—take your choice of words—of allowing single-engined land planes to fly across hundreds of miles of sea. Lindbergh, Chamberlin, Goebel, Jensen, and others have done it. And other brave men also will do it—with much favorable publicity resulting to aviation—if they get there. But is it sensible? Is it of any advantage to the further growth of aviation? Does it in any way promote the reality of trans-ocean airlines?

I do not think so. The only practical good resulting from these long flights in planes not suited to ocean flying has been the advertising of aviation to the public—and if our future advertising is to consist of such pathetic displays as were afforded the public by this over-rushed flight, then it is not impossible that the good done by the successful

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flights will be wiped out. It seems to me that while we have spent years telling the public that aviation was something that could be made part of the national transport system, and that it was not in any sense a dare-devil stunt, that we are now eagerly engaged in demonstrating that aviation *is* a stunt—and a very daring and fool-hardy stunt, at that.

As a fitting climax to this pathetic parade to advertise pineapples, it might not be inappropriate for Mr. William Wrigley, Junior, to offer a prize to the survivors, to swim back and advertise Mr. Wrigley's chewing gum.

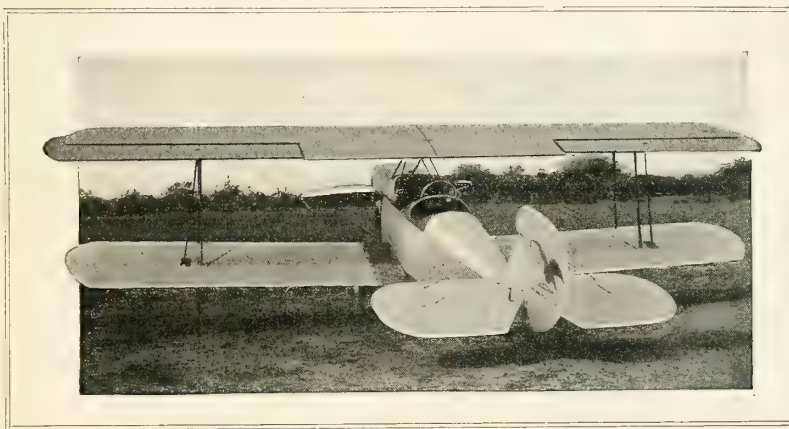
WHEN the Department of Commerce called a conference to discuss landing-fields for New York City, William P. MacCracken, Jr., a capable and very busy executive, took time to come to New York and call a meeting at the Hotel Belmont. And he wasted his time. For what he found confronting him were the Amalgamated Real Estate Dealers of all counties in New York and New Jersey. And every dealer had his own airport to sell. There were men there with all kinds of property to dispose of—from bits of marshland that nothing drier than a fish had ever been over, and that nothing but a mosquito could ever fly from, to back yards so small that a canary bird would have felt cramped for room in which to take off.

The meeting started with a committee of twenty-five and an audience of hundreds; but by the time the horde of real estaters had said their little piece there were only five of the committee left, and only seven of the audience. And five of that audience were newspaper men who had to stay, one old tramp who fell asleep in a corner, and myself—I was trying to sell a lot I own in Windsor, On-

tario. And it's nearer New York than some of the proposed fields the other salesmen were offering, and bigger than some of them. The only people with real estate which they should dispose of, and who didn't come around to offer it, were the Federal Government. They didn't come there and offer Governor's Island—the only logical place for an airport in New York. They are keeping it as a polo ground and tea parade for army officers—who will have to swim away from it, anyhow, if an enemy nation ever flies over and bombs it.

Bill MacCracken listened patiently for a while to old women with chicken yards to sell, and then he went back to Washington. And I guess he's had enough of us, and is going to stay there. If New York wants an airport, the people of New York—not the salesmen—must get together and get it. And the way to get it is to pry loose Governor's Island from the clutches of the army—and shove the army out in the woods some place where it will be safe in the next war. That Island is of inestimable value to New York as an airport—and it's no more use to the Federal Government than is another leg on a centipede.

The only bright spot in that deadly meeting of buy low and sell high addicts was the presence among the Great and Near Great fiasco of a gentleman who vaguely resembles Willie Stevens of the Hall, Mister Grover Whalen, the official welcomer of the City of New York, who has welcomed everybody who ever landed here, from Hendrick Hudson and Queen Marie to Abie's Irish Rose. But now a vexing problem presents itself. Grover is going over to Europe, and will return shortly. But when he returns, how the devil is he also going to be here to welcome himself back?



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AIR—HOT AND OTHERWISE

(Continued from page 266)

started as a good and worthy impulse.

And why not weed out of the Air Corps Reserve such officers as are really unfit to qualify for training? That would not cost enough to endanger any pet plan of the Member from Squeedunk who is saving Uncle Samuel's pennies so that there may be plenty of them for Pork Barrel Appropriations which will include cash for deepening Cow Creek till it will be navigable by canoes. A very small sum would enable these men to do at least something for that country which most of them love with far more than the intensity with which Pennsylvania Avenue patriotism usually burns.

There are many members from Podunk, Squeedunk and Yaphank who could put themselves upon the map and become real figures in our national life if they but looked around and found that in the field of air development a man might specialize most easily, usefully and notably as a real Congressional entity. None offers finer opportunities than the well-being and progression of our national aviation.

The problem I have mentioned gets bigger every year. An avalanche of justified complaints pours in continually from officers of the Reserve who rightly feel themselves aggrieved. Why not straighten this thing out? It would cost little, either of cash or mental vigor—and we know we have a surplus of the former. Let some member of our national legislature startle us and all the world by indicating that we have a mental as well as a financial reserve!

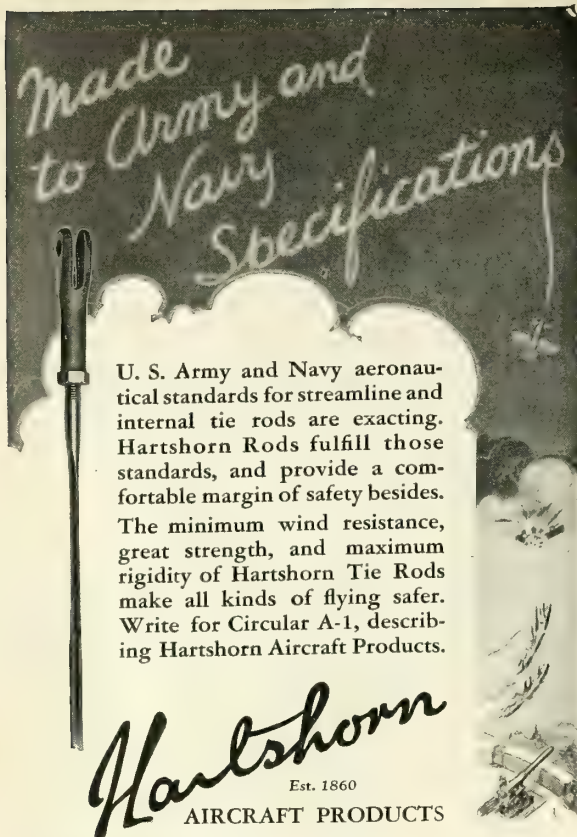
WHILE on the Reserve subject a word about the Naval Reserve may not be amiss. There is real desire among the young men of America to join the Naval Reserve Squadron, also, but the Navy itself, characteristically holding itself sufficient as things are, does what it can to make the procedure difficult. Join, if you like, but get a plane if you can! That seems to be the Naval attitude. Civilians must not break in where those wearing uniforms habitually tread. It is almost impossible for a member of the Naval Reserve Flying Squadron to get a ship to fly in after he has joined the force because he loves his country and this wonderful new art and learned to fly. A shipless aviator is as useful as a fireless furnace.

The Navy has no use whatever for untrained civilian would-be fliers. Only after they have gained splendor through great achievements as civilians does the Navy feel that they are good enough to wear its brazen buttons even as reservists. Then, doubtless, it assumes that the brass may strike in and make them purely Naval.

Now and then it slips as it attempts to climb this rope. Secretary Wilbur, for example, one of the world's greatest grabbers, lost his grip on it and crashed plump on the hard deck of fact when he endeavored to annex the Lindbergh glory and pin it on the Navy's chest, which has as much right to it as is possessed by the Ancient and Honorable Order of Chinese Pigtail Plumbers.

The effort to make the public think "Lindy" part and parcel of the Navy by sending after him a Naval ship for the official greeting after his flight from Europe was full of genius of the press agent type.

Secretary Wilbur is a man of excellent judgment as well as of great personal beauty (wait till after he leaves office and his portraits join those of the histrionic stars, the movie idols and great pugilists in Lucky Strike ads) possessing, besides these indispensable requisites for the post of naval chief that further quality of grab-and-gettish-



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Slightly used 130 h.p. Clerget \$150. Slightly used 6-cyl., 45 h.p. Anzani \$245. New 100 h.p. OXX6 \$600, or Navy overhauled \$375. New OX5 \$400.

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ness so useful in a fighting man in wartime and so natural to the politician in the days of peace. We have small doubt that when his troublous cabinet term is over he will achieve a mighty reputation in the pictures. Chaplin, I have learned from California, needs a sidekick for his forthcoming film, "Splicing the Main Brace," a fierce maritime companionpiece to "Shoulder Arms," that placid epic of our dry land fighting men. So, later on, we may discover in some handsome image flashed brightly on the screen as we spend an idle evening in the Flimflam Picture Palace the incomparable features of our Secretary of the Navy.

The film, as the advance notices have indicated, will teach that sweet, sad story of the Navy's great achievement in construction of the Roosevelt Dam. It is also to show clearly why the Navy should be given credit for the Federal Reserve Act and that masterly eclipse of the sun which recently was visible in northern England.

GENTLEMEN who have been sent to Washington by their fellow-citizens in various sections of this nation, permit AERO DIGEST to direct your distinguished notice to the fact that the Atlantic has been crossed by our own fliers (not one but several) in far less than two days and that the Pacific has been shrunk to the Great Lakes size by the California to Hawaii flight of 2400 miles in 26 hours.

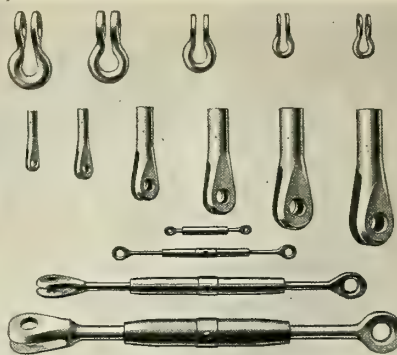
Other nations will fly West over the Atlantic as we have flown Eastward over it. Other nations will fly East along the Pacific lane which we have mapped to Westward.

And honorable members of the Senate and House, Cabinet Ministers and chiefs of our Government Defense Departments, what may interest you more (for we have no illusions about those who sit serene in our seats of the mighty) permit us to suggest that all these various activities form proof that interest in aviation really stirs the nation which honors and supports you. If such matters wholly fail to stir you, therefore, you may find yourself without a job when another election comes 'round.

NOW that the voters are beginning to see the importance of aircraft in our national defense, the propaganda mills of our rocking-chair sailors are working overtime grinding out their customary bunk. Not a word about Admiral Moffett or the Bureau of Aeronautics and the good work they are doing. No, no, not a word—just the Navy and Secretary Wilbur. They would have you believe that the Navy under Secretary Wilbur's guidance had taught Orville and Wilbur Wright the rudiments of flying. Yep—and this is the same Secretary Wilbur who early this year told an audience in Chicago that we had nothing to fear from invasion by enemy aircraft or some such rot to that effect.

These, like any other comic opera lyrics, will sound well if the music's good. Mr. Wilbur should employ a very competent composer to set such various great thoughts to tunes. Merely spoken and not sung many of them seem unworthy of so great a dignitary as the Secretary of our Navy, but this with characteristic wisdom, Mr. Wilbur (we have not been creditably told), intends to carefully provide for when Congress authorizes the appointment of one more assistant secretary. The man whom he has chosen for the job will meet (it is not said) with the approval of all jazz constituencies and black bottom experts. Mr. Irving Berlin, the gentleman in question, will be very handsome in a naval uniform.

When Mr. Wilbur gets the musical department of the Navy really going under forced draught with anchors up and the shapeliest comic opera chorus crew to be recruited



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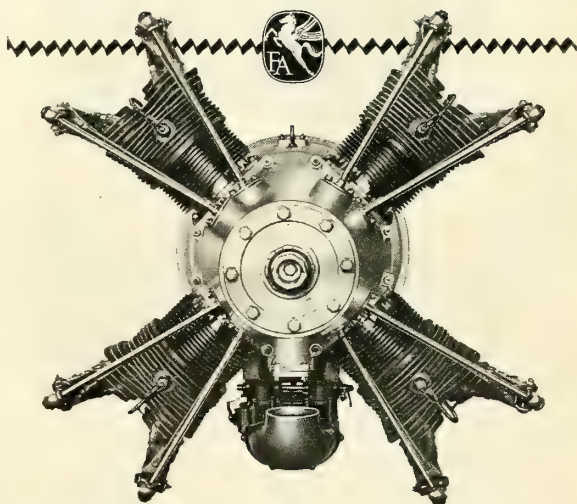
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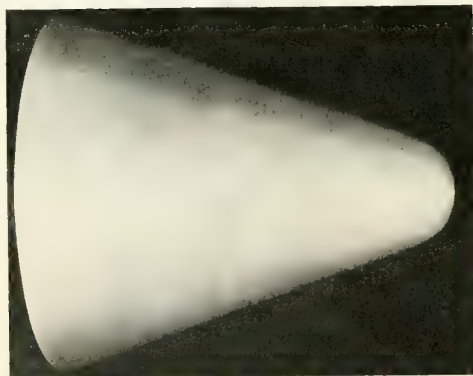
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on Broadway on deck, we doubtless shall get on our radios from far out at sea (to leeward) some lovely numbers explaining to the people that the Navy is all for a national air development and that it is, 100 per cent, in favor of the scrapping of all useless surface craft and the immediate construction of vast air escadrilles. Escadrille suggests quadrille. Quadrille suggests the ballet. There is a mysterious sympathetic tie between the Navy as it stands now in its air effort and any other comic shows.

THE Secretary, urged on by the appreciative cheers of old line Naval officers heard plainly, although their voices are a little muffled by the clenching of their teeth and the presence between these fearsomely set molars of large knives which it is a fond secret hope some glad day may be used for carving up all energetic friends of aviation, has shown publicly his tremendous love for fliers and the art they follow. It is clearly just that sort of love that when mixed up with matrimony sends men to the dock for wife-beating.

Secretary Wilbur, "delighted and enthusiastic" because Smith and Bronte, civilian fliers, landed safely in Hawaii, still finds it necessary to very roundly scold them because, in a moment of quite comprehensible worry, they radioed a message indicating that they feared it would be necessary to make a forced landing in the sea. Mr. Wilbur is outraged, apparently, because they managed to avoid so dangerous an adventure.

If civilian fliers find themselves so situated that they seem likely to smash up and drown in an endeavor to accomplish air feats at which Navy men have failed, it is an insult to the Secretary of the Navy, the flag of the United States, the great horn spoon of the Mare Island Navy Yard, the accepted tenets of all naval law and the he-goat mascot of the great ship *Idaho*, for said fliers not to need the aid they feared might be essential.

Civilian fliers who once give serious consideration to the thought of drowning, therefore, in future forthwith must proceed to drown. The Secretary of the Navy will be very cross with all civilians, hereafter, who dare to send out calls for aid which, subsequently, by the discovery of said civilians alive, are proved to have been unnecessary.

AERO DIGEST is endeavoring to get the original manuscript of the New Naval Regulation for Civilian Fliers as Prepared by Hizexcellency Curtis D. Wilbur, Secretary of the Navy and Aviation Expert. In literary style, beauty of penmanship, nautical effect and brevity, it is already called unparalleled by all specialists whom Wilbur could court-martial if they thought otherwise.

It says (AERO DIGEST exclusive as the Associated Press would say):

"Civilian fliers in trouble over the sea must not send out S.O.S. emergency signals until after they have drowned. To find a live civilian who can do stunts at which it fails quite naturally annoys the Navy. Drown first. Then signal. Obedience to this rule by all civilian pilots is imperative. Penalty for violation: ten strokes of the cat-o-nine tails or a careful reading (subject to examination afterwards) of the Hon. Curtis D. Wilbur's latest speech on aviation, which shows the world how utterly impossible it would have been to fit wings to "Old Ironsides," and, therefore, how silly all this air stuff for civilians is, anyway. A subtitle is 'If Everybody Flies What Can the Poor Steel Trust Do.'"

A FEW ideas that later have made fame and fortune have been at first rejected by short-sighted capitalists, and that the genius of the Wrights and Zeppelin is

supposed to have been thus handicapped is a favorable pride-salve among aeronautical inventors who can't get their notions over.

How many wild announcements have been made by innocent-minded journalists whose technical ignorance has been greater even than their personal innocence when strange, impossible devices have been rumored! Flying is being daily revolutionized in print, although the art progresses with an orderly deliberation at draughting board, factory and flying field. Such ridiculous articles detailing technical bunk do general harm, and this is sometimes manifested through the fact that they supply material for fly-by-night promotion schemes.

The general public rapidly is developing a special type of easy mark, particularly interested in a wild, bizarre, fantastic amateur conception of the possibilities of mechanical flight. The layman known to be considering investment never is informed by the glib-tongue promoter or fancy advertiser that for every worthy air invention that is overlooked are 999 "ideas" which are not workable and might be better overlooked. The really good things usually are snapped up quickly by some argus-eyed commercial manufacturer who searches for good new things.

But the situation is quite different when new ideas are advanced as worthy as established experts. Upon the efforts of such men and the support the public gives them depends the future of the art and business. An impressive example of this sort is the Remington-Burnelli airplane designed by Vincent J. Burnelli and first demonstrated as long ago as 1921, being then the world's largest commercial airplane.

At the very start the new breed of cargo-carrying bird obviously embodied valuable innovations, although there were so many of them and they were so novel that they shocked conservative minds. Elaborate charges were made against the plane by the skeptical who said it would not fly.

These statements were in straight line with orthodox conclusions and would not be impressive were it not for the mere fact that the machine was flown successfully with unprecedented loads of passengers, that its occasional forced landings were made without mishap, and that 800 total h.p. was found quite sufficient motive force though two 600 h.p. engines had been the original plan.

A year later followed stories of a Staten Island crash of what old-liners had begun to call "The Crate" and naturally, when a few months had passed, the experiment was quite forgotten.

But not forever. An improved RB2 presently appeared at Mitchel Field and took off carrying a motorcar as inside cargo and a nice passenger list. The new idea took its place among the old as being worthy of quite practical consideration. RB2 was actual, not a crazy dream.

The unusual ship remains in perfect shape, easy to fly and despite the early critics astonishingly easy to land, of great carrying capacity (25 passengers on many test occasions) of good speed.

If our newspapers and word-of-mouth dreamers could but get the accurate information and the impulse which would lead and help them to discuss the real among the innovations and avoid the fanciful and foolish it would be wonderful—but a condition not of this world. Burnelli built his plane under difficulties and to the amusement of the unthinking crowd. While he was handicapped by lack of funds which made it difficult for him to get a pair of engines and was being smiled at by the "experts," he was building just the sort of plane that is being built to-day and so necessary to air transportation.

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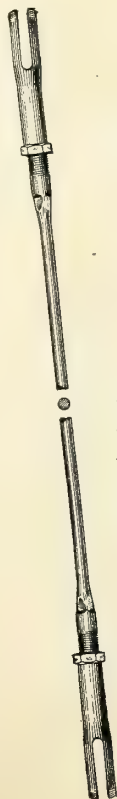
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On the ground 5 men are needed for one in the air, but if you want to become a pilot you easily master the work and can go into postal, government, or commercial work. Flyers are in demand, earning big money at fairs taking up passengers, etc. \$5 for a 10 minute flight is pretty fine pay!

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AMERICAN AIR-COOLED AIRCRAFT ENGINES

(Continued from page 272)

Our modern aircooled engines meet all of the requirements listed above. They may be criticized from the standpoint of cost and yet they are very cheap in the quantities at present demanded. We have three sizes of aircooled engines in this country. The first of these is the famous Wright "Whirlwind" of 200 horsepower. The second is the rapidly becoming famous Pratt & Whitney "Wasp" of 400 horsepower. In the 500 horsepower field, there are two new engines, the Pratt & Whitney "Hornet" and the Wright "Cyclone."

The aircooled engines are lighter in weight than the watercooled engines because the cumbersome cooling system, including the radiator, piping, shutters, etc., is completely eliminated. This takes away from the powerplant weight about .6 pounds per horsepower. The aircooled engines are more dependable than the watercooled engines, other things being equal, because of the elimination of the cooling system. The records show that at least one-third, and perhaps one-half of the engine failures in the air, result from a failure of the cooling system. The new aircooled engines are durable because they are well built. They are economical because they are well designed and because they do not have to carry around the cumbersome cooling system. They are much easier to take care of because they are built in the single-row radial form which gives ready access to all the working parts. You can change cylinders, pistons, and connecting rods without disturbing the other cylinders, a thing which cannot be done with the watercooled engines. The engines are cheaper because they have fewer parts, are much simpler in design, require less material, and lend themselves better to quantity production. Aircooled engines have, then, a marked superiority in all of the six requirements.

Aircooled engines did not come to the United States of their own volition. They had to fight their way. A comparatively small group of engineers analyzed the possibilities of the type some seven years ago. Ever since, they have fought against inertia, indifference, and even active opposition. The triumphs of the intrepid transoceanic flyers have also been triumphs for the engineers, many of whom are pilots themselves.

During the World War, and for many years thereafter, watercooled engines were developed, proved, and refined to a high degree. The Navy Department, believing in the possibilities of the aircooled fixed radial type, purchased experimental engines, and as soon as these had proved satisfactory, ordered a limited production quantity. These experiments were first made in the 200 horsepower size.

The engines went out to the vessels of the fleet. Hundreds of officers and mechanics worked with them suggesting and making improvements. The changes were incorporated as rapidly as could be in new production engines until finally the "Whirlwind" became the standard 200 horsepower engine of the Fleet.

As soon as the engine had proved itself, inquiries came in from commercial activities. One of the first of these was for some airplanes designed to dust cotton crops. Soon the engine attracted attention abroad with the result that orders came in from Canada and South America. The success of these engines established the "Whirlwind" in the hearts of the commercial operators. The United States Army has now adopted it and is purchasing quantities.

The aircraft which must operate from vessels of the fleet must meet certain restrictions which commercial and

military airplanes do not need to encounter. Seaplanes to land and take off in rough water must have low landing speeds. Landplanes to land on the decks of carriers must also have low landing speeds. At the same time, Naval airplanes must be reinforced and stiffened to take the shocks of catapulting, deck arresting and hard landings at sea. In spite of these, restrictions which also include that very difficult complication of having to be as small as possible, forced us to go the limit in powerplant weight reduction. A survey of the field showed the possibilities along this line of the air-cooled engine. It would have been simpler, perhaps, to have continued along in the development of the highly developed watercooled engine, but the results would never have been attained. We therefore attacked the new problem with vigor and the final result is that to-day we not only have wonderful engines in 200, 400, and 500 horsepower classes, but we have some wonderful airplanes around them.

It has been the history of aeronautics that even the most skillful designers have not been able to do a highly satisfactory design job around the very best of the watercooled engines. The new aircooled engines have so simplified the problem that numerous compromises have been eliminated and now even the comparatively inexperienced designers of airplanes can build real machines. When, however, a very skillful designer works around the new aircooled engine, the final and inevitable result is the type of aircraft the Navy now has in use,—ordinary service airplanes which go out in the course of a day's work and bring back world's records.

As a result of this development, our design problems have fallen apart. The Navy uses five classes of airplanes ranging from the small Fighter through the Observation airplane, Training plane, and Scout-Torpedo-Bombing plane up to the great twin-engined flying boats. To-day we are in production in quantity or are ready to go into production in quantity in all of these classes. If war were to be declared to-morrow, we could set the wheels of industry humming in the manufacture of airplanes which we are certain excel those of any possible competitor. We are certain of this because our service types hold world's records.

To summarize briefly, the American aircooled engines have placed America in the forefront of aeronautics. American aircraft have crossed oceans and dropped in for friendly visits to the airports of Europe. These results are not just flashes in the pan, but are indications of a steady progress and sound foundation.

AVIATION PROGRESS

(Continued from page 274)

landing could not have been made safely until the tanks were emptied by means of a small hand pump which meant at least three hours' work. If this could not be done, the bottom of the boat would break up under the impact of the weight or, being too submerged, would quickly fill up with water. It would have been possible to use a dump valve to empty the tank but an early take-off prevented the installation of this precaution which they had planned to install. The design was such that as soon as the tanks were emptied the valves could be closed again and, after a buoyancy of the tanks would sustain the plane in the water.

The first American project to cross the Pacific ocean, although unsuccessful, was made under much better conditions. A three-motored flying boat (the PN-9) with a crew of five men, was used for this flight and, after a forced landing on the ocean, was navigated for eleven days,

IMPORTANT!

STUDENTS should be sure that they learn to fly in licensed planes with licensed pilots as instructors. They themselves should be registered with the Department of Commerce. The Department of Commerce specifies that this requirement be met before instruction can be taken in licensed planes. (Chapter 4.)

All training planes at Eaglerock Airport, New Rochelle, New York, are new and licensed. Instructors are licensed transport pilots and all students are registered.

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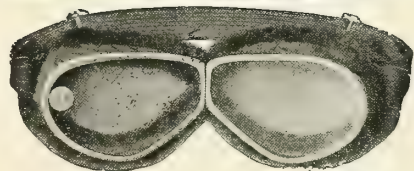
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of which eight were under bad weather conditions.

As regards other planes landing in the sea, their many deficiencies are innumerable. They could stay afloat on the water for only a few hours even with the tanks empty and used as a means of flotation. This was the case with the *America*, the safety of the crew being due to the fact that the forced landing was made close to the shore in shallow water. This permitted them also to salvage the plane although it was badly damaged.

SAFETY

The question of safety is naturally dependent upon radio communication with a shore station or ships on the sea. The radio apparatus used to-day is still very delicate and not always infallible in operation. The practical radius is rather limited. The radio telephone range is 300 to 500 kilometers; radio telegraphy 500 to 1000 kilometers. This means that in good weather the plane could be in communication with shore stations only during one-third or one-quarter of the flight. But what would be the result in conditions of gale and dense fog? This is a problem which must be studied and shown by experience.

We do not intend to consider at this time the commercial possibilities of similar flights where it is possible to carry some pay load, because at present pay loads cannot be carried on account of the enormous fuel loadings. The present flights are made counting more on the courage and personal ability of the crew. The technical interest is rather limited because, so far, no new designs were used and calculations would indicate that the probability of just avoiding catastrophe without any assurance of final success, is but 13 to 20 per cent. An enterprise of this nature to-day must be considered as a sporting event in which one admires the courage of the pilots and the chances taken by

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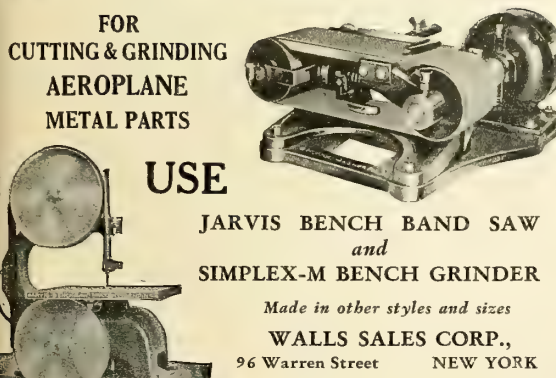
the promotors.

Are the deaths of those who failed justified in view of the success or information gained by those who survived? Opinions differ. Mr. Lauflang believes the flights have no direct technical interest and the ones that are in project crossing the sea, Asia, Europe and America, only hide the real value of the present aeronautical technique. Failures may have detrimental effect on public opinion and consequently on the progress of commercial aviation.

We do not agree with such pessimistic conclusions, however. In the history of the automobile industry there were similar happenings. Ordinary types of automobiles are not used in races and yet they have had a great influence on the progress and development of commercial automobile designs. Similar results will be achieved from these extraordinary flights. If they inspire study and experiments with a view to obtaining more efficient wing profiles, to adding a sure means of communication with shore or better means of navigation in fog and gales, the results obtained will be of inestimable benefit to commercial aviation.

In concluding this partial translation of Mr. Garuffa's article, we feel that there is a point of justification for such flights as Lindbergh's, Chamberlin's and Byrd's that he has not considered. The results of these flights cannot be merely gauged by the technical progress or lessons learned from them. History shows that sacrifices are necessary in the advance of civilization. Heroism can always find a justification of its own but because the goal of progress in transportation is so vastly important, heroism in this case must be accepted as unavoidable in the struggle for progress and comfort.

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FOREIGN AERONAUTICAL NEWS IN BRIEF

Compiled from the foreign aeronautical press, the Automotive Division and the Transportation Division, Bureau of Foreign and Domestic Commerce

ENGLAND

UNDER the new subsidy plan, £50 is to be paid to the approved clubs for each pilot qualifying for the "A" or "B" Aviator's Certificate. In addition to this, £10 will be paid to each club for each active member on a club's list who holds a current certificate. Also a grant of 30 s. per hour of flying time up to a maximum of 20 hours per annum will be paid to the club for the flying done by each individual pilot. The total amount of the subsidy will not exceed £2,000 to any one club in any one year.

Before August 1st, when the new plan came into force, each approved club was given a grant of £2,000 on its formation with a further grant of £5,000 a year for the first two years, plus £10 for each members taking his certificate.

The new subsidies for Light Aeroplane Clubs are to operate for three years at the end of which time the Air Ministry hopes that the clubs will have become self-supporting.

FLIGHT LIEUT. C. R. CARR and Flying Officer Dearth were forced down in the Danube, 110 miles west of Vienna, on August 2nd, on their third attempt to set a non-stop distance record in a Hawker-Horsley bomber with Rolls-Royce Condor engine. Neither flyer was seriously hurt. The failure is said to have been due to an overheated engine.

THE HON. LADY BAILEY, accompanied by Mrs. Geoffrey de Havilland, on July 5th ascended in her DH Moth at Stag Lane aerodrome to an altitude of 18,000 feet, thus beating Mrs. Elliott Lynn's recent flight of 16,000 feet in an Avro Avian. This is believed to set up a new altitude record for light airplanes.

THE photograph below was taken at Stag Lane Aerodrome during lunch time on Friday, June 3rd, and it shows a typical collection of Moths. With the exception of lining the machines up, no advance arrangement was made for the taking of the picture. In the front row are, nearest the camera, Lady Bailey's Moth, prepared for the Bournemouth Meeting; Mr. David Kittel's, finished in black and silver; Captain W. R. Bailey's, in the colors of his regiment; Cap-

tain Eric Hayes', a visitor from Shropshire; Lord Ossulston's, from Northumberland; the Hon. Geoffrey Cunliffe's, just returned from the tour of Spain and North Africa, carrying the Duchess of Bedford as passenger. Farthest from the camera in the front row is a Moth used by the American Naval and Air Attachés. The second row is composed of six de Havilland School machines. Nearest the camera in the back row is the Norwich Club Moth ready for delivery; the next one is owned by Mr. Merton, one of the latest private-owners. Beyond that is one of the fleet owned by Air Taxis, Ltd. Then three of the London Aeroplane Club machines; and farthest from the camera, G-EBOI of the Hampshire Aeroplane Club, about to return to Hamble.

CAPTAIN HUBERT BROAD flew in a Tiger Moth monoplane from Stag Lane aerodrome, Edgware, to Reading and back, 62.14 miles, in 19 minutes 59.3/5 seconds at an average speed of 186.47 m. p. h. This establishes a new speed record for light airplanes.

The Tiger Moth has a span of 22 feet; is fitted with a 32 h.p. four-cylinder Cirrus air-cooled engine and will fly 30 miles on a gallon of gasoline.

THE King's Cup race at Northingham on July 30th, was won by Lawrence Hope, piloting a DH60 Moth. He completed three circuits of 180 miles each, at an average speed of 92.9 m. p. h. Capt. W. J. McDonough in a Westland Widgeon made second place.

CANADA

THE Royal Canadian Air Force will undertake the following 1927 program of Civil Aviation for the various Government Departments:

DEPARTMENT OF THE INTERIOR

Forest Service—Aircraft fire detection patrols in southwestern Alberta, the Rocky Mountains forest reserve from near the international boundary to the Saskatchewan river. In Manitoba and Saskatchewan, aircraft fire detection patrols and suppression of fires over the forested areas to the east and north of Lake Winnipeg and westerly across northern Saskatchewan to Alberta.

Topographical Survey—Vertical aerial photography in connection with mapping the Rouyn mineral area in the Gatineau, Batisseau, and Ste. Anne de Beaupre districts in Quebec. Vertical photography in western Nova Scotia and in the Muskoka, Sudbury, and Temiskaming districts of Ontario. Oblique aerial photography for mapping the Quetico, Lake of the Woods, and Lake Nipigon districts in Ontario. In Manitoba vertical photography in the Riding Mountain district and oblique photography in the Lac la Ronde and Lac Mironde areas. Vertical photography in the vicinity of Red Deer, Alberta, and on Vancouver island, British Columbia. Oblique photographs of the Wood Buffalo park in the Northwest Territories.

Canadian National Parks—Fire detection patrols in the Waterton Lakes park and Rocky Mountains park. Pictorial views of sites of historic interest when circumstances permit.

Dominion Water Power and Reclamation Service—Vertical and oblique photographs in connection with the development of power projects in Ontario and Quebec. Vertical photography of Rainy Lake, Ontario, and the Nelson and Churchill rivers in Manitoba and Saskatchewan.

International Boundary Commission—Vertical and oblique photography over the international boundary from Lake of the Woods to Emerson, Manitoba.

OTHER DEPARTMENTS

Department of Indian Affairs—Transportation of treaty-paying parties in northern Manitoba.

Department of National Revenue—Transportation of officers of the preventive service.

Department of Marine and Fisheries—Aerial patrol of Hudson straits to determine ice conditions in connection with navigation of Hudson Bay. Patrols for the prevention of illegal fishing on the Pacific coast.

Department of Agriculture—Experimental dusting for the prevention of wheat rust in Prairie Provinces and for the control of the spruce bud worm in Cape Breton Island.

Department of Mines—(In coöperation with the Topographical Survey.) Vertical photographs in mineralized areas in Ontario and Quebec.

Department of Public Works—Vertical and oblique photography of harbors and harbor works.

Department of Railways and Canals—Vertical photography of Welland Canal.

THE site for a dirigible mooring mast, to be erected at St. Lambert, Quebec, has been chosen at the end of Victoria Bridge (Montreal District).

This was decided after competition with Ottawa and Halifax.



A line-up of De Havilland "Moths" at Stag Lane Aerodrome.

FRANCE

THE Federation Aeronautique Internationale has awarded its gold medal for the greatest air achievement of 1925 to Commander Francesco de Pinedo for his flight from Rome to Tokyo.

Sir Alan Cobham was awarded the 1926 medal for his round trip flight from London to Melbourne, Australia.

The transatlantic flights of Col. Charles A. Lindbergh and Commander Richard E. Byrd and the San Francisco-Honolulu flight of Lieuts. Maitland and Hegenberger were given special mention as air achievements of 1927. Medals for 1927, however, will not be awarded until 1928.

LIEUT. PARIS made a new altitude record for seaplanes on August 19th carrying 2,000 kgs. (4,409.24 lbs.). He ascended 4,500 meters, or slightly over 14,763 feet, surpassing the previous record held by A. Passalova, of Italy, of 3,261 meters or 10,699 feet.

THE Lafayette Escadrille monument, one of the greatest war memorials, is near completion in the Parc de Villeneuve l'Etang, near Paris. Sufficient funds to complete the structure have been raised by the memorial association, of which U. S. Ambassador Myron T. Herrick is president and Marshal Foch, honorary president.

Frederick Prince of Boston, father of Lieut. Norman Prince, who died with the Escadrille in France, was a principal contributor to the final sum of \$40,000 raised for the monument itself. William Nelson Cromwell, vice-president of the association, has endowed the monument with funds for its perpetual upkeep.

GERMANY

JOHANN RISTICZ and Cornelius Edzard broke the world's endurance record on August 5th by flying for 52 hours, 23 minutes, 11 seconds. The former world's record, 51 hours, 11 minutes, 25 seconds was set by Clarence Chamberlin and Bert Acosta on April 13-15, 1927.

In the *Europa*, a Junkers W-33 plane with a Junkers L-5 engine, the same one in which they are planning to fly across the Atlantic, Risticz and Edzard hopped off from Dessau on August 3rd, flew back and forth from Dessau to Leipsic, and landed at Dessau at 10:13 a. m., August 5th, having been up in the air 1 hour and 12 minutes longer than Chamberlin and Acosta. The distance covered in the flight was 3,753 miles.

Two Junkers planes started out to break the endurance record on August 3rd. The second one, the *Bremen*, piloted by Friedrich Loose, was forced to land, however, after several hours' flight on account of the failure of one of the magnetos.

FIVE new world's records were broken on July 27th when Hermann Steindorff piloted a "Rohrbach-Roland," fitted with three B M W engines, carrying a pay-load



P & A Photo

Van Lear Black and his Dutch pilots, Geysendorfer and Scholte, being greeted at Amsterdam, Holland, on their return from a 18,600-mile air tour of Dutch East India.

of 2,000 kg. over a distance of 100 km. (Nedlitz-Marwitz). The records are:

1. Speed over 100 km., with useful load of 2,000 kg.—214.5 k. p. h.
2. Speed over 500 km., with useful load of 2,000 kg.—215.4 k. p. h.
3. Speed over 500 km., with a useful load of 1,000 kg.—215.4 k. p. h.
4. Speed over 1,000 km., with a useful load of 2,000 kg.—214.9 k. p. h.
5. Speed over 1,000 km., with a useful load of 1,000 kg.—214.9 k. p. h.

On July 31st, Steindorff attained three more records. 1. Speed over 2,000 km., with a useful load of 2,000 kg.—205.3 k. p. h. 2. Speed over 2,000 km., with a useful load of 500 kg.—205.3 k. p. h. 3. Distance with a useful load of 2,000 kg.—2,316 km.

On the morning of August 3rd, the "Rohrbach-Roland," piloted by Steindorff, took off with a gross weight of 7,800 kg. in 18 seconds and again broke a distance record. They landed in the evening after flying 1,750 km. over a triangular course, Nikolassee-Wittenberg-Ruthnick with a payload of 2,000 kg.

On August 12th, an altitude record was made: With a useful load of 1,000 kg. he attained the height of 6,850 meters.

AT the recent gliding competitions in the Rhoen Mountains, Central Germany, Herr Nehring maneuvered his motorless plane to an altitude of 600 feet and flew a distance of 32 miles.

THE Lufthansa has made an agreement with the German railroads whereby the latter will deliver packages to the nearest flying field, at a charge of 25 cents extra. Planes will then transport the express to its destination, or to the nearest point reached by the airline and from there the railroads will complete the job.

A PRIZE of 100,000 marks (about \$24,000) will be given by the German Aero Club to the first German pilot who flies across the Atlantic in a German-built plane. The engines may be foreign models but they must be constructed in Germany. The prize will be awarded only if the flight is concluded inside 84 hours.

RUSSIA

AIR service between Berlin and Moscow via Danzig, Königsberg and Riga was started on July 15, 1927, by the Deruluft Company. This service is to supersede the old route between Berlin and Moscow which went via Kovno and Smolensk. The latter service was discontinued in 1925, and the linking up of Riga by air with Moscow and Berlin is an event of considerable importance to Latvia. The service will be maintained with single motor Dornier-Merkur monoplanes each equipped with a 600 h. p. B. M. W. VI engine.

Accommodations will be provided for 6 passengers, one pilot and one mechanic. Four planes will be in permanent operation and two will be held in reserve at each terminal. Daily flights are scheduled, Sundays excepted, and passengers, freight, luggage and mail will be carried. The distance between Berlin and Moscow will be covered in approximately 15 hours including the time required for landing at intermediary stations. In the direction Berlin-Moscow passengers will be required to change planes at Königsberg, but in the direction Moscow-Berlin no change will be required. Travelers intending to use this service must comply with the usual passport regulations and must secure visés before commencing their journey.

The Deruluft Company is negotiating with the Estonian Government regarding the possibility of extending this service to include Tallinn (Reval). The Estonian authorities have opposed the use of the Estonian military aerodrome for commercial flying, but should this project go through as planned, it will be possible to fly from Berlin to Riga, Tallinn, Helsingfors and Stockholm.

The service just started permits travelers to fly from Berlin to Moscow and there connect with Russian planes leaving for Orel, Charkov, Poltava, Kiev, Odessa, Baku, Tiflis, and Mineralnya Vodi, which are connected by the planes of the Russian Ukrovosdchput Company. Further connections can be made with the planes of the Dobrolet Company which are operated to Turkstan and the Far East.

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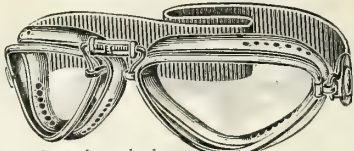
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THE DOLE PACIFIC FLIGHT

(Continued from page 254)

were soon ended—and anxiety, fear and despair gripped the world.

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"Lone Star Bill" Erwin, piloting the *Dallas Spirit* which had had to return to the starting point shortly after the take-off in the race, hopped off from Oakland Field at 2:15 p. m. on August 19th to zigzag over the Pacific to Honolulu in search of the two missing planes. With the radio sending set taken from the wreck of Major Irving's *Pabco Flyer*, and fuel supply enough for 36 hours' flight, the *Dallas Spirit* lifted its load of 5,650 pounds in the air.

Captain Erwin was also trying for the Easterwood \$25,000 prize for a four-stop flight from Dallas, Texas to Hongkong. His plane was not equipped with a radio receiving set.

At 6:45 p. m. the plane was speeding ahead 459 miles at sea. The fliers reported having changed their course at 6:40 p. m., and their position at that time was latitude 35 degrees, 30 minutes North; 130 degrees West. Everything was said to be O. K., but no trace of planes or wreckage had been sighted. At 9:02 p. m. an S O S call said the plane was in a tail spin. The radio then discontinued operation. That was the last heard from one of America's foremost war aces, Erwin, and Eichwaldt, his young navigator.

Ships still continue to comb the Pacific at the date of this writing, hoping to find a clue to the fate of the fliers.

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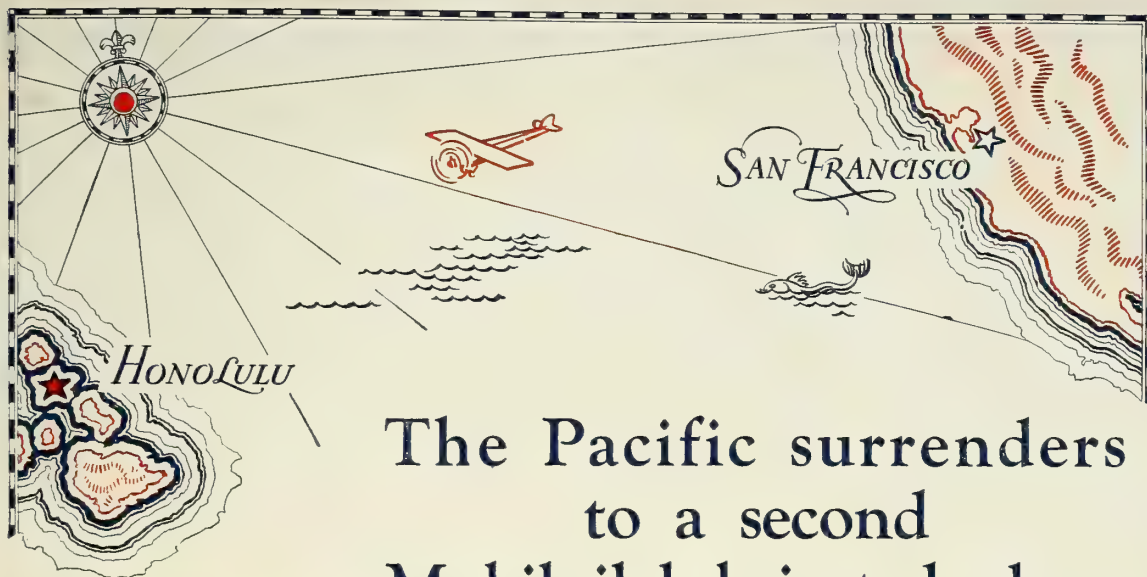
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The Pacific surrenders to a second Mobiloil-lubricated plane

Goebel, Dole Prize Winner, uses Gargoyle Mobiloil "B"

MOBILOIL'S 1927 Record

Mobiloil flew from San Diego to New York and then from New York to Paris with Col. Lindbergh. And Mobiloil is being used in all his flights in this country.

Mobiloil flew from San Francisco to Honolulu with the U. S. Army fliers.

Mobiloil flew around Japan with the Japanese fliers.


Mobiloil flew again from San Francisco to Honolulu with Pilot Goebel.

Mobiloil flew around Australia with Captain R. Williams.

Mobiloil flew around the Union of South Africa with Major Miller.

In each case regular stock Gargoyle Mobiloil was used.

1927, the year of great aeronautical events, sees another great air triumph.

Flying a  monoplane "Woolaroc" powered with a Wright Whirlwind engine, Arthur Goebel wins the first trans-oceanic air derby.

This is the second successful flight from San Francisco to Honolulu by a Mobiloil-lubricated plane.

The U. S. Army Fliers used Mobiloil when they pioneered the air route across the Pacific to the Hawaiian capital a few weeks ago.

This year Gargoyle Mobiloil has demonstrated its dependability in flights over both the Atlantic and the Pacific.

FIRST:—In Col. Lindbergh's plane, when he flew from New York to Paris.

NEXT:—In the U. S. Army plane that first flew from San Francisco to Honolulu.

And now:—In Arthur Goebel's plane which has won the Dole prize.

The Gargoyle Mobiloil used in all these flights was our regular stock Mobiloil "B." You can buy this same Mobiloil at, or within reasonable distance of every flying field in the United States.

For dependable lubrication buy Mobiloil.

GARGOYLE

Mobiloil

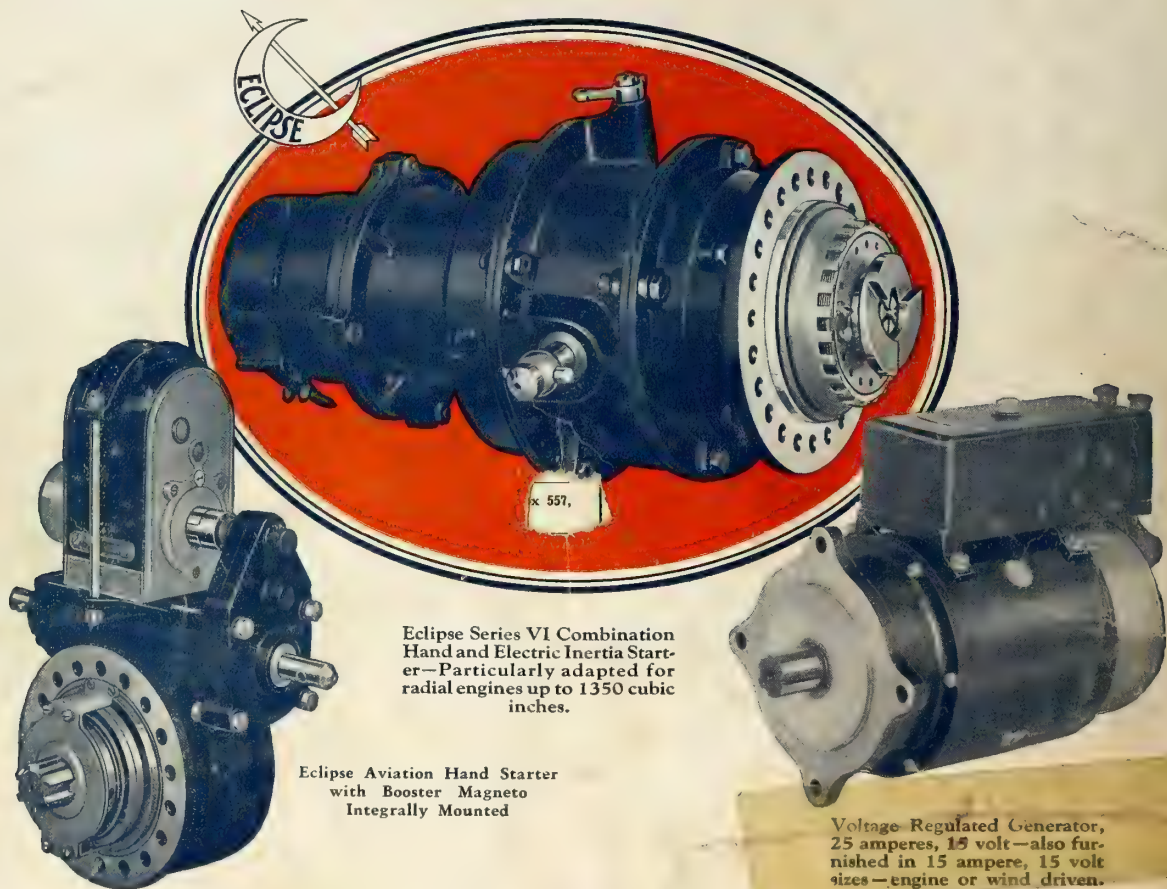
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nished in 15 ampere, 15 volt
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Vol. XI. No. 4

OCTOBER 1927

25 CENTS

AERO DIGEST



RESULTS OF THE AIR RACES

ENGINEERING INVESTIGATION SHOWS THAT
LINDBERGH'S FLIGHT WAS NOT "LUCK"

Scientifically Planned and Scientifically Carried Out

RECORD OF BROCK AND SCHLEE'S FLIGHT TO JAPAN

The weather's effect upon
transatlantic flight attempts

Thirty-one hours in a balloon
The 1927 Gordon Bennett Race

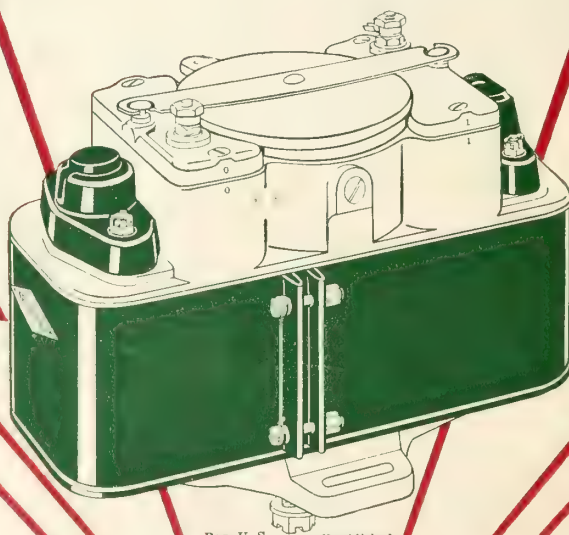
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SPLITDORF magnetos for airplanes are instruments of the most modern design, built to operate with the highest efficiency and the utmost reliability under all conditions of service.

The VA Model illustrated is an inductor type vertical magneto for the heaviest types of engines with from four to twelve cylinders. This instrument has independent electrical circuits and produces four double sparks per revolution, either synchronized or staggered. It is provided with 30 degrees advance and weighs, without the distributor blocks, 13½ pounds.

Splitdorf is one of America's oldest manufacturers of ignition devices. For years the aircraft industry has depended on Splitdorf to contribute ignition instruments up-to-the-minute in design and completely dependable in performance.

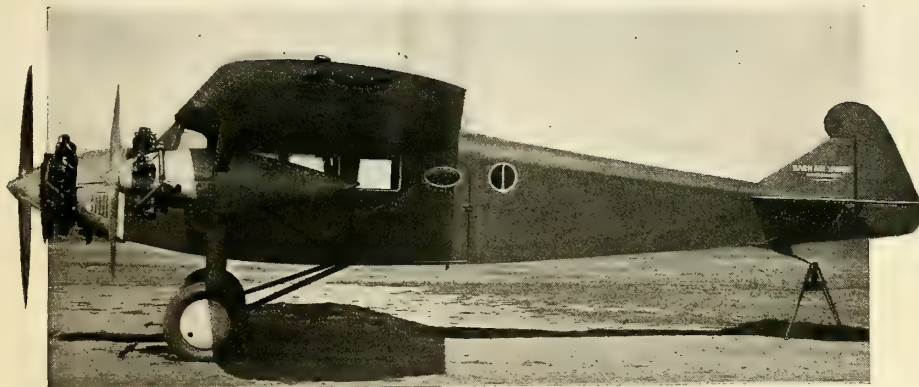
Full information on the model illustrated and on other types of Splitdorf Airplane Magnetos will follow your inquiry. Splitdorf Electrical Company, 392 High Street, Newark, N. J. *Subsidiary of Splitdorf-Bethlehem Electrical Co.*



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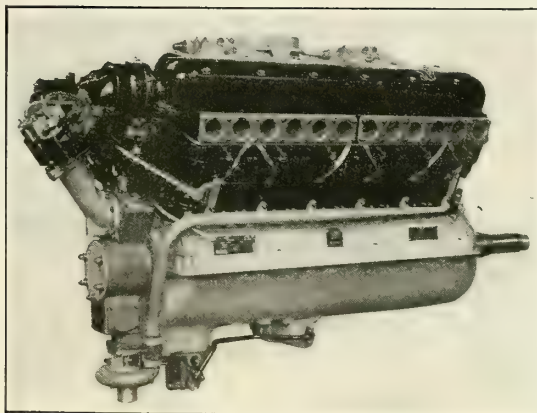
Boeing Airplane Co.
Seattle, Washington

DAB

Mail by Air and Speed it There



RAISING THE STANDARDS



THE CURTISS V-1550 MOTOR

What the four entries did at Spokane September 24th:

Winners of Liberty Engine Builders Trophy Race—

First: Lt. H. Johnson, U.S.A., in Curtiss Falcon. Average speed 170 m.p.h.

Second: Lt. G. A. McHenry, U.S.A., in Curtiss Falcon. Average speed 162 m.p.h.

Winners of Free-for-all Pursuit Ship Race—

First: Lt. Eugene Batten, U.S.A., in Curtiss Hawk. Average speed 201 m.p.h.

Second: Lt. A. J. Lyon, U.S.A., in Curtiss Hawk. Average speed 189 m.p.h.

When the now-famous Curtiss D-12 motor of 435 horsepower was introduced to the aeronautical industry in 1923, it immediately raised the standards of design for high-performance military aircraft. Its tremendous power, small frontal area, and low weight per horsepower made possible the development of the remarkable American fighting planes which today are acknowledged as the world's finest.

The new 600 horsepower Curtiss V-1550 motor has far more power, less frontal area, and lower weight per horsepower than the D12. It retains all of the basic design features which have made the D-12 noted for its smooth operation and unfailing reliability.

The V-1550 again raises the standards in military aircraft design

THE CURTISS AEROPLANE & MOTOR CO., INC.

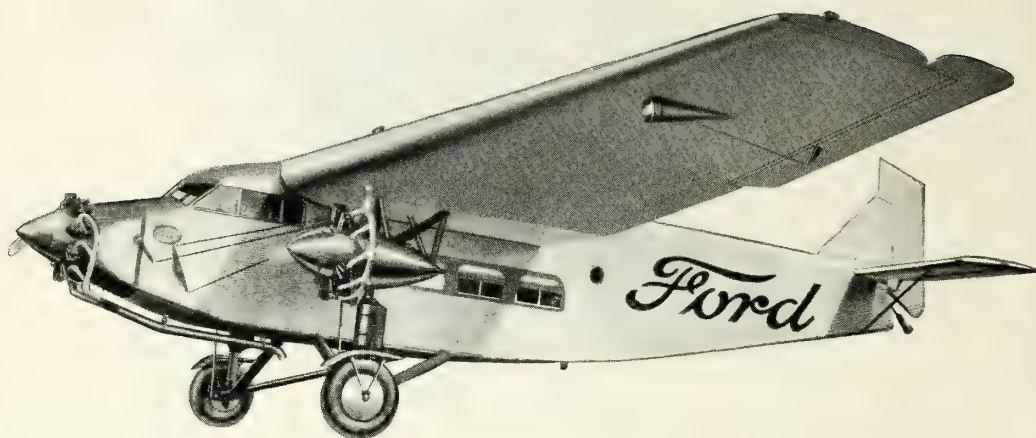
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Say you saw it in AERO DIGEST

Why Ford monoplanes are made entirely of metal



THE purpose of commercial planes is earnings. Naturally, these come only after all expenses. Consequently the first step is keeping expense at the minimum. Reduction of expense to the air-line operator is one of the reasons Ford monoplanes are built entirely of metal.

The metal that goes into Ford monoplanes does not deteriorate as wood and fabric must. It doesn't rot or warp, stretch or tear. Right there is a reduction in maintenance. Also assurance of more continuous service.

Fit of replacements is another advantage. Every part of a Ford monoplane can be replaced direct from stock with no time or labor expense in adjusting to fit. An hour of ground-work saved is an hour your plane can be in the air—earning . . . maintaining schedules.

Here is another saving you may not have considered. Wood varies

widely in strength. One piece of wood will stand forty thousand pounds. Another, apparently exactly like it, breaks at twenty-five thousand. A wide safety-margin must be allowed. That is weight which takes the place of pay-load. Metal, on the other hand, can be accurately gauged, and excessive safety-margins are not needed. The greatest possible percentage of your lift is carrying profit-paying loads.

The superior rigidity and strength of metal wing construction removes the need for many trusses and braces inside, and struts and wires outside. Not only is the final weight lighter than wood and fabric construction, but also parasite resistance is greatly

reduced; lift and speed are both increased.

The use of all-metal construction is but one of the many instances of the steps taken to make Ford monoplanes capable for successful and continuous air-line operation. A more complete idea of how Ford monoplanes meet the needs of air-line operators may be obtained from our new booklet, "The New Era of Transportation," which will be mailed to you upon request. In addition, this booklet contains much valuable information gained from practical experience in operating the Ford air-lines. If still more information is desired on any phase of experimental or operations work connected with commercial flying or airplane building, it will be furnished to any who wish it, free of cost or obligation.

THE STOUT METAL AIRPLANE CO.
Division of Ford Motor Company
Dearborn, Michigan

AERO DIGEST

Vol. 11 No. 4

THE MAGAZINE OF THE AIR

OCTOBER, 1927

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American fliers, Schlee and Brock, in their "Pride of Detroit," passing over the famous Moslem Mosque of St. Sophia, Constantinople enroute to Japan.

SHOULD OCEAN FLYING BE CURBED?

By
William P. MacCracken, Jr.

Assistant Secretary of Commerce for Aeronautics

Secretary MacCracken gives the views of our three Assistant Secretaries for Air on this important subject of Government regulation of transoceanic flying.



THE year 1927 will long be remembered for its great transoceanic flights. Names of United States pilots, aircraft and motors have been written indelibly upon the pages of aeronautical history. Lindbergh in a Ryan; Chamberlin and Levine in a Belanca; Byrd, Acosta, Balchen and Noville in a Fokker; Maitland and Hegenberger in a Fokker; Smith and Bronte in a Travel Air; Goebel and Davis in a Travel Air; Jensen and Schluter in a Breese and Brock and Schlee in a Stinson, all powered with Wright Whirlwinds, represent a total of four successful flights across the Atlantic, and an equal number from California to the Hawaiian Islands.

Public opinion, which had lagged as aviation gathered speed, with these astounding accomplishments, zoomed as no airplane ever did. It would be too much to expect that such a record could be established at this stage of aeronautical development without some failures. Failures there have been, with a regrettable loss of life. When these occurred public opinion "stalled." There were demands for government prohibition and rigid regulations on all sides. However, President Coolidge, Secretary Hoover and others declared that such restrictions were not only unnecessary but were undesirable and would be of little or no avail in curbing the spirit of the aeronautical pioneer.

The following statement was issued recently by the Air Coördination Committee:

"The Air Coördination Committee, composed of the Assistant Secretaries for Aeronautics of War, Navy and Commerce, has given careful consideration to measures which might be desirable in relation to civilian transoceanic flights. The members of the committee, in common with all their fellow-citizens, profoundly regret the loss of life in such flights during the past two months and extend their sympathy to the relatives and friends of those who have perished.

"A special hazard is attached to the use of landplanes for long distance over-water flying. A forced landing far from shore and far from help is almost inevitably fatal in its result, such a machine having but little chance of survival on the surface of the sea even in such condition as to permit the occupants to launch any life-saving appliances. That seaplanes or flying boats are safer and better adapted for over-water use is evidenced by their regular employment on many commercial routes and by

the numerous instances in which such a machine and its crew have been picked up substantially unharmed after floating on the surface of the water for many hours or days following a forced landing.

"Notwithstanding and recognizing the serious hazards attached to transoceanic flights, the members of the committee are agreed in not favoring any specific governmental prohibition of pioneering flights.

"They believe that such flights should be discouraged except when undertaken by personnel competent to measure the risks involved, with the most careful preparation and with the best possible equipment. They are satisfied that public opinion will itself act to that end and will impose a restriction on the offering of any direct incentive for the making of exceptionally hazardous flights without requirement of reasonable precautions.

"The Departments of War, Navy, and Commerce are at all times ready as in the past to assist if requested and as might be practicable when flights have been planned or undertaken, and

to advise with those proposing such trips on the difficulties and the risks involved."

Unfortunately we can only speculate as to the cause of the failures. However, in all probability they were due either to latent mechanical defects, adverse weather, or errors of judgment.

These causes of failure can and will be gradually reduced, but absolute safety in any form of transportation can never be attained, much less should it be expected in pioneering enterprises.

Most of those active in aeronautics readily distinguish between trail blazing flights and every day commercial operation of aircraft, but unfortunately a good many of the general public do not.

A great number of people get their conception of aviation from the daily press. Every day occurrences are not news. Extraordinary happenings during the past summer have kept the pendulum of public opinion swinging in both directions, but on the whole substantial progress has been made.

The Department of Commerce has endeavored to render every assistance possible to these brave spirits, both winners and losers. It does not advocate, however, attempts to stifle initiative and daring when all proper known precautions have been taken.

THE SEIGE OF SPOKANE

The Successful 1927 National Air Races

"BILL" MACCRACKEN knew how the gang felt about the affair at Spokane when he

By C. B. Allen

got up to say his piece at the banquet and ball which rounded out the National Air Races of 1927. He had the right idea, which was that everybody had been treated so well by the city and citizens of Spokane that they would want to stay right on there indefinitely.

As the distinguished Secretary remarked, in much more polished phrases, Spokane put on a great show; probably the greatest from most points of view in the history of American aviation meets. A lot of new records were set and while few of them are ever likely to be certified by the F. A. I. or even the N. A. A. they were none the less astonishing in their own way.

First of all, both from the backers' and contestants' point of view, was the unheard of fact that the air races paid their own way and would have left a comfortable balance on the right side of the ledger if a score of ticket sellers hadn't succumbed to the easy money idea. The sponsors liked this feature of the air carnival because it didn't leave them holding a bag full of debts and the fliers liked it because it meant the meet was a great popular success and that the people were turning out to see them do their stuff. Promoters of the New York 1925 National Air Races and the Philadelphia financial fiasco of last fall will now heave sad sighs.

Then there was Casey Jones. Skeptical readers may remark that this is neither a record nor news for there is al-

ways Casey Jones wherever air meets are held and prize money is to be had.

But the point is just that; Charles\$\$. "Casey" Jones\$, intrepid aviator (I wonder who first coined that?) and redoubtable Vice President in charge of flying of the Curtiss Company, was on hand without his famous clipped-wing Oriole and flew nothing more exciting than a borrowed Eaglerock which he piloted on a \$5 bet to seventh place. If the spectacle of Casey Jones returning from an air meet without so much prize money in his cash pocket that his ship habitually flies with one wing low isn't a world record in aviation then what is?

How the mighty are fallen! Casey's stellar role at the air races was as starter in the "rubber band racer" class, a post for which he was selected because of his recognized ability both as a flier and a Goodyear expert. Incidentally, Casey served as a substitute starter in other events for Lieut. George O. "Rex" Noville. No one quite seemed to know what happened to Rex but the general impression seemed to be that he was convinced that only the preliminaries were being held at Felts Field.

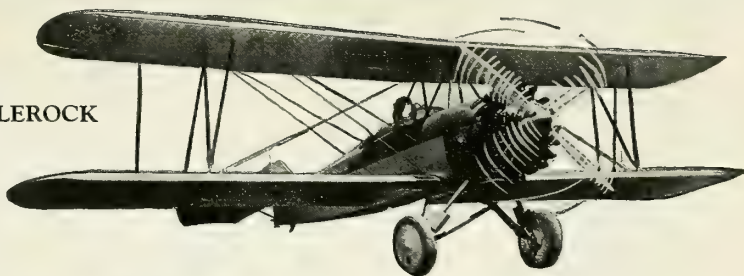
Casey's traditional rival in American air meets since the Wright Brothers flew their first kite, James Ray, of Philadelphia, was on hand with his "standard" Pitcairn sesquiplane and its "suped-up" Curtiss C-6 engine and put a lot of Mr. Wright's Whirlwinds in their places by averaging 138 miles an hour in the so-called speed and efficiency races for commercial airplanes. Jimmy lamented to his kindred spirit, Mr. Jones, over the fact that he was unable to



SOME OF THE CLASS "A" RACE PLANES AND PILOTS

Top row—E. W. Cleveland, Ryan Brougham; Nicholas Mamer and Bruce McDonald, Buhl Airster; James Ray, Pitcairn Mailwing. Center row—C. W. Holman and Tom Lane, Laird; Anthony Mackiewicz, E. E. Ballough and Charles Dickenson, Laird; Robert Hoffman and Hamilton Lee, Yackey Monoplane. Bottom row—Robert Fogg, Waco-10; International F.18; Lt. Jack Frye, Fokker Universal.

EAGLEROCK



WACO-TEN



YACKEY



Silvertowns

in the

NATIONAL AIR RACES



THE most modern aircraft in the New York-Spokane Air Derby, September 19 to 21, were equipped with Goodrich Silvertowns. Yackey, Waco, Eaglerock and many other well-known types are guarding against tire failure at critical times by using the tried and proved Silvertowns.

Landings were made at eleven fields on the trip to Washington—on all kinds of fields and regardless of weather conditions.

Silvertowns gave these pilots one thing less to worry about on this longest cross-country race.

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

FOR SAFE HOP-OFFS AND SMOOTH LANDINGS

1927 NATIONAL AIR DERBY AND AIR RACE RESULTS

Spokane, Washington—September 19-24

NEW YORK—SPOKANE AIR DERBY

Race for Class "A" Airplanes (September 20)

All of the planes competing in this class were equipped with Wright J5 engines, with the exception of the Laird planes, which had Wright J4s.

First—Prize \$10,000—Laird Commercial; National Lead Battery Company; C. W. Holman, pilot; and Tom Lane, passenger.

Second—\$5,000—Laird Commercial; E. E. Ballough, pilot; Anthony Mackiewicz, mechanic; and Charles Dickenson, passenger.

Third—\$2,000—Buhl Airster; Nicholas Mamer, pilot and Bruce McDonald, passenger.

Fourth—\$1,000—Waco-10; John P. Wood, pilot and W. H. Wren, passenger.

Fifth—\$500—Yackey monoplane; Hamilton Lee, pilot; and Robert M. Hoffman, passenger.

Race for Class "B" Airplanes (September 19)

All competing planes had Curtiss OX engines except the Monocoupe which was equipped with an air-cooled Detroit Air Cat.

First—Prize \$5,000—Waco-10; Berry Brothers, Inc.; C. W. Meyers, pilot; and T. B. Colby, passenger.

Second—\$3,000—Eaglerock; Leslie C. Miller.

Third—\$1,000—Eaglerock; James Shelley Charles.

Fourth—\$500—Travel Air; Eugene J. Detmer, pilot; and Lieut. Jack Eiseman, passenger.

Fifth—\$250—Travel Air; W. H. Emery, Jr.

Non-Stop Race (September 21)

Three planes were entered; Stinson monoplane, Eddie Stinson and Fred Koehler; Stinson monoplane, "The Royal Windsor", Duke Schiller and Eddie Bohn; Air King, Steve Lacey and L. A. Yancey.

Eddie Stinson's plane landed at Missoula, Mont.; "The Royal Windsor" came down at Billings, Mont.; the Air King failed to start within the time specified.

SAN FRANCISCO-SPOKANE AIR DERBY

Race for Class "A" Airplanes (September 21)

All planes competing had Wright J5 engines.

First—Prize \$1,500—Travel Air; H. C. Lippiatt.

Second—\$1,000—International; Lee Schoenhair, pilot; and Thomas F. Wells.

Third—\$500—Breese monoplane; Vance Breese, pilot; Mrs. Breese, C. B. Allen and R. S. Meyers.

Race for Class "B" Airplanes (September 21)

All competing planes had Curtiss OX engines.

First—Prize \$1,000—International; City of Aberdeen; C. L. Landdon, pilot; R. N. Bergen, passenger.

Second—\$500—Travel Air; D. C. Warren.

Third—\$250—Eaglerock; Aero Corporation of Calif.; Lee Willey, pilot; Art Carlton, passenger.

Fourth—Brown monoplane; A. R. Borne, pilot; and Robert Grey.

NATIONAL AIR RACES

September 23-24

Event 1—Sport Plane Race for Aero Digest Trophy

First—Prize \$500—Heath Parasol; E. B. Heath.

Event 2—Light Commercial Speed and Efficiency Race for Aviation Town and Country Club Trophy

Speed

First—Prize \$500—Pitcairn Sesquiwing; James Ray.

Second—\$250—Laird Commercial; E. E. Ballough.

Third—\$100—Laird Commercial; C. W. Holman.

Efficiency

First—Prize \$900—Hamilton Metalplane; J. Miller.

Second—\$500—Eaglerock; Paul Richter, Jr.

Third—\$250—Pitcairn Sesquiwing; James Ray.

Event 3—Free-for-All Race Low-powered Airplanes for the Western Flying Trophy

First—Prize \$1,000—Travel Air; Eugene Detmer.

Second—\$600—Eaglerock; Paul Richter, Jr.

Third—\$400—Waco-10; Berry Bros.; C. W. Meyers.

Event 4—Race for Light Airplanes for the Dayton Daily News Light Airplane Trophy

First—Prize \$500—Heath Parasol.

Event 5—Race for Observation Type Airplanes for Liberty Engine Builders' Trophy

First—Curtiss Falcon XO-13; Lieut. H. A. Johnson.

Second—Curtiss XO-13; Lieut. G. A. McHenry.

Third—Douglas O-2; Lieut. W. R. Taylor.

Fourth—Douglas O-2; Lieut. V. A. Grant.

Event 6—Race for Large Capacity Airplanes for the Packard Trophy

First—Fokker C-2; Lieut. H. W. Beaton.

Second—Douglas C-1; Lieut. W. H. Doolittle.

Third—Douglas C-1; Lieut. T. J. Koenig.

Event 7—Race for Pursuit Type Planes

First—Curtiss P-1; Lieut. W. L. Cornelius.

Second—Curtiss P-1; Lieut. I. A. Woodring.

Third—Curtiss P-1; Lieut. L. C. Mallory.

Fourth—Boeing PW-9; Lieut. W. A. Maxwell.

Event 8—Free-for-All Race for 2, 3 or 4 Place Airplanes for the Seattle Chamber of Commerce Trophy

First—Prize \$1,000—Pitcairn Sesquiwing; J. Ray.

Second—\$600—Laird Commercial; E. E. Ballough.

Third—\$400—Laird Commercial; C. W. Holman.

Fourth—\$250—Waco-10; John P. Wood.

Fifth—\$150—Pitcairn Mailwing; A. M. Banks.

Sixth—\$100—Alexander Eaglerock; J. McInaney.

Event 10—Speed Race for National Guard Pilots and Planes for the Aero Digest Trophy

First—Prize \$500—Douglas O-2; Capt. T. W. Symons.

Second—\$300—Douglas O-2; Capt. Harold R. Neely.

Third—\$150—DH-4; Capt. Edward Axberg.

Event 11—Air Transport Speed and Efficiency Race for the Detroit Air Transport Trophy

Speed

First—Prize \$750—Ryan Brougham; F. M. Hawks.

Second—\$300—Fokker Universal; Jack Frye.

Third—\$200—Hamilton Metalplane; John H. Miller.

Efficiency

First—Prize \$750—Hamilton Metalplane; J. Miller.

Second—\$300—Fokker Universal; Jack Frye.

Third—\$200—Ryan Brougham; F. M. Hawks.

Event 12—Free-for-All Military Pursuit Ship Race for the Spokane-Spokesman Review Trophy

First—Curtiss; Lieut. E. C. Batten, U. S. A. C.

Second—Curtiss; Lieut. A. J. Lyon, U. S. A. C.

Third—Boeing; Lieut. T. P. Jeter, U. S. N.

Fourth—Boeing; Lieut. G. F. Bogan, U. S. N.

Event 13—Race for Pursuit Type Navy Planes for the Alexander Pantages Trophy

First—Boeing; Lieut. T. P. Jeter, U. S. N.

Second—Boeing; Lieut. G. F. Bogan, U. S. N.

Third—Boeing; Lieut. H. E. Regan, U. S. M. C.

Fourth—Boeing; Capt. F. O. Rogers, U. S. M. C.

One-Two for Laird! in the National Air Derby!

Both ships a year old.

These ships flown a total of 200,000 miles.

Both ships with records clear of any major repairs.

The National Air Derby, New York to Spokane, September 21, was a Laird Sweepstakes!

First was taken by C. W. Holman in Laird Commercial C-240. Second, by E. E. Ballough in Laird Commercial C-110. It is significant that both are standard commercial jobs, with a total of 200,000 miles to their credit, and no major repairs of any kind.

It is further interesting that C-110, which placed second, is the same plane used for a record trip

between Chicago and New Orleans—1960 miles in 16 hrs. 20 min. And did 70,000 miles air mail service.

Commercial plane users will do well to consider that these ships competed against numerous entries built especially for the Derby. When two entries of standard jobs, built a year ago, can enter an event of this importance and place one-two, commercial job buyers will be interested in further facts.

E. M. LAIRD AIRPLANE COMPANY, 4500 West 83rd St., Chicago, Ill.



"clean up" more than \$1,500 in prize money, whereas it had cost him about \$2,000 to ship the plane to Spokane and back by express. Casey chuckled over this bad news.

Another pathetic figure at the races was Kenneth J. Boedecker, Wright Field Service Engineer, his pockets overflowing with Whirlwind spare parts (he probably got the idea from Levine) instead of the customary spoons. "Bodey" was terribly downcast when he spent a whole week in Spokane and the Hotel Davenport house detective never once searched him for silverware.

Odus A. Porter, official timer, and Carl F. Schory, secretary of the Contest Committee of the National Aeronautical Association, also went in for a little unconscious

humor when they hastily figured up the elapsed time for the New York-Spokane derby winners and runners-up. Their arithmetic was wonderful but they forgot all about New York being three time belts away and on Daylight Saving as well, so the transcontinental racers got credit for some marvelous speed. One or two of the more skeptical scribes thought it sounded too good to be true and checked up on matters but the Associated Press and others sent the "official elapsed times" out in good faith.

Messrs. Porter and Schory had a little joke played on them later on when the Army pilots got together and decided to fly their observation plane race to suit themselves instead of running it off according to the book of rules.



A GROUP OF THE PARTICIPANTS IN THE NATIONAL AIR RACES AND AIR DERBIES.



WACO 10 WINS!

Charles W. Meyers accompanied by T. F. Colby



C. W. Meyers

Won the Class B National Air Derby from New York to Spokane with a standard production model Waco 10—a remarkable example of fine piloting and performance of a stock model plane.

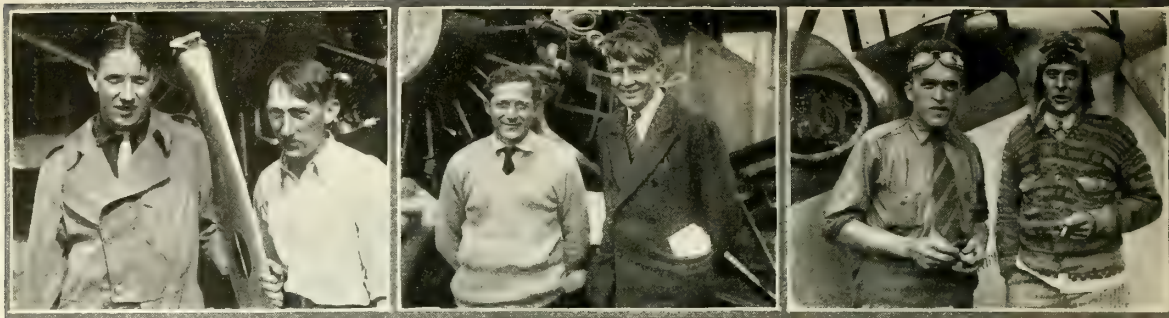


T. F. Colby

The motor used was a stock OX5 without changes of any kind in overhead or compression.



MANUFACTURED BY ADVANCE AIRCRAFT CO., TROY, OHIO



Competitors in the non-stop New York-Spokane race: Schiiller and Bohn; Koehler and Stinson; Lacey and Yancey.

They flew only ten laps of the specified twelve, or rather all of them but Lieutenant V. A. Grant did and he lost count, going the full dozen. Schory and Porter expressed some indignation at this "high handed procedure" but finally acquiesced in it, the real joke developing the next day when the committee in charge of prize awards discovered by the entry blanks that only one man, Lieutenant Grant, had "finished" the race, and almost awarded him first prize before discovering the mistake.

Incidentally a lot of Army, Navy and Marine officers who are not eligible for money prizes but may accept trophies and medals, have plenty of incentive to begin looking around for a "little woman" to help them find a use for the silver tea and coffee services that were handed out among the other spoils of Spokane. One hard-flying and harder-boiled Devil Dog is alleged to have been overheard wondering "how much real money this stuff would hock for or melt down to?" Which reminds one that a lot of the boys complained bitterly about the "iron money" so much in vogue throughout the west, most of them not having seen a silver dollar since they cut their teeth.

Which gets us back again to prize money and another of the little tragedies of the races. It seems that eleven commercial airplanes of various design had entered hopefully for the Detroit News Air Transport Trophy Race and that eight had been eliminated by one of those coups known as "one fell swoop" when those in charge discovered they lacked the required cargo space. Those left were the Hamilton all-metal monoplane, a Ryan passenger monoplane and a Fokker Universal, AERO DI-

GEST's official press ship on the Pacific Coast.

Frank Samuels, of AERO DIGEST, and Jack Frye, pilot of the Fokker, were certain that the Ryan would be a little faster than their plane but they were equally certain that they could carry more ballast than anyone else and therefore "clean-up" on efficiency and still take second place in speed. All they had to do was put more sand on board than was piled into the Hamilton and this they undertook to do by keeping a close check on proceedings about the metal monoplane. Everything would have gone fine but John H. Miller, the Hamilton's pilot, scented the plot and worked a ruse of his own by putting in extra sand from the "off" side of the ship after Samuels and Frye thought he was all loaded. He took first place in efficiency by a margin of a few pounds.

The local press, accustomed to the elegance of "Bill" Boeing's plus fours and other sartorial splendor, just naturally refused to believe that anybody as greasy and ordinary looking as Eddie Stinson was when he arrived on Felts Field after the failure of his attempted non-stop flight from New York to Spokane, could be a designer, particu-

larly of a plane they had heard so much about as the Stinson-Detroit. They talked to Eddie enthusiastically enough as the pilot who had landed nearest to his goal in the non-stop event but they seemed to reach a tacit decision among themselves that some other Stinson than this soiled and unkempt person to whom they were talking was responsible for the design of the plane he flew. And they religiously referred to him only as "Eddie Stinson, pilot."

Which brings to mind one of



Some of the military planes which participated in the Spokane races. (Left, top to bottom)—Curtiss Falcon with wing radiators; Curtiss Falcon with tunnel radiator; Boeing-Navy (Packard); Curtiss-Navy FCG-4 (Wasp engine). (Right, top to bottom)—Curtiss Hawk; Fokker Transport C-1; Curtiss Hawk with wing radiators; Douglas Observation O-2.

Gordon Aerotogs

aid winner in National Air Derby



C. W. "Speed" Holman in his Gordon Aerotog flying suit. Photo taken shortly before his winning dash from New York to Spokane, Washington.



HIGH over New York City, fifteen dauntless airmen pointed fifteen roaring planes toward a goal 2300 miles distant, on the Pacific Coast. After 19 hours and 52 minutes (flying time) C. W. Holman brought his Laird Commercial machine to rest on Felt's Field, Spokane—a winner by more than three-quarters of an hour.

On this thrilling dash, "Speed" Holman well realized that every ounce of his endurance and every bit of his attention must be given to his ship. Therefore, he chose a suit of fur-lined Gordon Aerotogs. And, throughout the long, long journey he sat at his joy-stick in perfect bodily comfort.

Gordon Aerotogs are made from the finest materials obtainable, expertly finished by hand. They include leather flying suits, fur-lined coats and jackets, leather and fur helmets, vests, gloves and mittens. When you want the finest in aviation clothing ask for Gordon Aerotogs. If your regular store cannot supply you, write to us today.

GORDON & FERGUSON, Inc.
Saint Paul, Minnesota



Navy and Marine Corps pilots in the National Air Races. Left to right—Lt. Thomas P. Jeter, U. S. N.; Lt. L. H. Saunderson, U. S. M. C.; Lt. G. H. Towner, Jr., U. S. M. C.; Captain F. O. Rodgers, U. S. M. C.

the most touching incidents of the matchless hospitality which Spokane showered upon her guests during the air meet. A certain correspondent (name furnished on receipt of an air mail stamp) who habitually is possessed of one suit, decided to have the coat of this cleaned and pressed one morning while he wore a flying jacket. "Why don't you have the pants fixed up, too?" asked the tailor.

Enlightened as to the state of his customer's wardrobe, the Spokane presser was undaunted. Nothing would do him but that a pair of his own pants be borrowed for the day, and so it was arranged. The correspondent was quite resplendent that afternoon and the kind-hearted and honest Spokane tailor will never know how near he was to losing a swank pair of trousers.

The men backing the air races were impressed by the fact that three great New York newspapers, the *Times*, the *Herald-Tribune* and the *World*, sent their aviation

writers across the continent to cover the meet. The backers appeared to get their biggest "kick" out of this evidence of nation-wide interest in their show and did everything in their power to assist the visiting newspaper men and make their sojourn pleasant. At the banquet which wound up the affair, Walter L. Evans, president of the National Air Derby Association of Spokane, saw to it that the toastmaster called on the trio of New York journalists to stand and let the guests look them over along with the other out-of-town "celebrities." Someone suggested that Mr. Evans really wanted to find out if the visiting scribes could stand but this was labeled as a base canard by those immediately concerned. Know ye, Gentle Readers, that these included Russell Owen, Francis A. Walton and the writer and draw your own conclusions. Then add Larry Smyth, of Portland, representing the United Press, to your findings and you can't go wrong.



Army Air Corps pilots who took part in the air races at Spokane.



BUILDERS of military planes prefer to use FLIGHTEX FABRIC because:

It exceeds the requirements of all Government specifications for airplane fabric.

To the manufacturers and operators of commercial planes the inherent strength of FLIGHTEX FABRIC means not only dependability but a reduction in the cost of maintenance.

FLIGHTEX FABRIC is made expressly for the aircraft industry. It is also put up in our "Specially Processed Finish" for aircraft manufacturers in such a manner as to reduce the cost of applying fabric and dope to the plane surfaces, also a smoother surface adds to the appearance of the plane

In the National Air Races!

NEW YORK TO SPOKANE

Class "A" — 13 of 15 planes starting were covered with FLIGHTEX

Class "B" — 20 of 25 planes starting were covered with FLIGHTEX

Class "C" — All planes starting were covered with FLIGHTEX

SAN FRANCISCO TO SPOKANE

Class "A" — 4 of 5 planes starting were covered with FLIGHTEX

Class "B" — 7 of 8 planes starting were covered with FLIGHTEX

All planes winning first prizes and most all the other prize winners were covered with FLIGHTEX

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SCHLEE AND BROCK FLY TO JAPAN

AFTER a splendid flight of 12,295 miles from Newfoundland to Tokio the Detroit fliers, Edward F. Schlee and William Brock, decided to return to America by steamer and not attempt the flight across the Pacific during this stormy season. They succeeded in covering this greater part of the distance around the world in the record time of 18 days—145½ flying hours.

As a magnificent example of skillful piloting, navigation and endurance of men, plane and engine, their flight is outstanding. Although it was no doubt a great disappointment to the fliers not to complete their flight around the world, it was just another evidence of their sound judgment in not risking the hazards of the transpacific hop in a land plane. They had intended flying from Tokio to the Midway Islands; from there to Honolulu, San Francisco, Cheyenne, Chicago, Detroit and Harbor Grace, 9,917 miles more.

The punctuality with which the fliers fulfilled their itinerary, with the exception of a delay of one day in Turkey by the red tape of the government authorities and three days at Omura by storms, thrilled the world. They were acclaimed with great enthusiasm at every port of call.

In the September issue of AERO DIGEST our story left them as they had taken off from Munich on August 30th and were enroute for Belgrade. This, their third hop, of 810 miles was made in 5 hours and 30 minutes. At Belgrade, Schlee and Brock planned to eat a light meal and continue on to Constantinople that afternoon. A heavy storm in their path, however, forced them to remain until the next morning.

Starting early the next day they made the 500 miles to Constantinople before noon and were preparing to push on to Aleppo in the afternoon when informed that they could not leave the field to fly over Turkish territory without authorization from the Turkish Government. This official permission was not received until the next evening and the *Pride of Detroit* soared away from San Stefano airdrome at 5:30 the next morning, September 2nd. They



P. & A. Photo.

The *Pride of Detroit*, Schlee and Brock's Stinson monoplane, flying over England.

flew over the gray minarets of Stamboul, on their 1,300-mile journey over the desert regions of Aleppo, Syria, around the Black Sea Coast, 136 miles longer but necessary in order to comply with a Turkish stipulation that they keep away from the naval base at Ismid, and landed at Bagdad at 9:30 p. m.

On September 3rd, they arrived at Bender Abbas, Persia, 885 miles; and the next day at Karachi, India, 710 miles. On this stage of the flight the weather was extremely good over the Persian Gulf, but over land the heat was terrific. One slight dust storm was encountered and low clouds and rain near Karachi. Shortly before landing, one of the gasoline tanks began to leak, but this was quickly repaired after landing at Karachi.

Brock and Schlee expressed admiration for the British Air Force in India, especially at Karachi, which, they declared, showed signs of good organization. The chief incident of the uneventful trip from Karachi was flying over the Sambhur Salt Lake at Rajputana, which, in the gleaming rays of the sun, presented a wonderful spectacle of rainbow colors from the air.

September fifth found the fliers and their Stinson-Detroiter monoplane at Allahabad, 925 miles further. Heavy monsoon showers had flooded the field at Bamrauli airdrome but a perfect landing was effected in spite of the sodden ground. They were off to Calcutta, 485 miles, the next morning, which they reached at 11:40 a. m., and rested the remainder of the day.

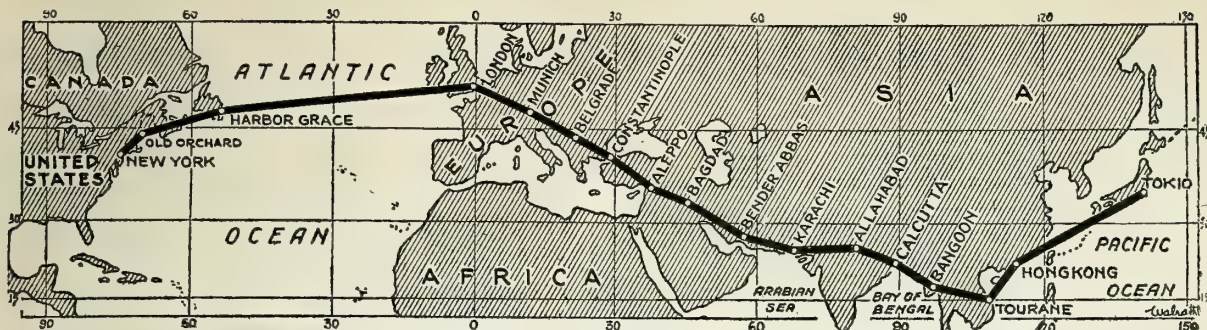
A fierce monsoon was encountered after leaving Calcutta on their way to Rangoon, Burma, and the fliers battled against storms over the Arakan Mountains and along the seacoast through pitch black darkness. The weather at Rangoon, however, was fine when they landed.

On September 8th the fliers flew direct to Hanoi in French Indo-China instead of stopping at Bangkok as planned. The route from Rangoon all the way to Hanoi was over mountains and jungle and through a torrid, humid atmosphere. The flight to



P. & A. Photo.

Schlee and Brock being greeted on their arrival at Croyden by "Doc" Kincaid.



Map showing the route followed by Brock and Schlee on their flight to Japan.

Courtesy N. Y. Times.

Hongkong was made the next day, the 9th, and to Shanghai the next, the 10th.

On the hop from Shanghai to Tokio the following day, September 11th, Brock and Schlee descended at Nagasaki airdrome, Omura, Japan, 600 miles from Tokio, having lost their course during a thunderstorm and became short of fuel. After taking off the next morning, storms again forced the fliers back to Omura. Omura is a fortified zone, which is closed to all foreigners, but as the land-

ing was forced, it was not protested by the Japanese.

Raging storms kept the *Pride of Detroit* in its hangar at Omura still another day but September 14th at 6:35 a. m. they took off and landed at Kasumingaura aviation field, near Tokio, at 3 p. m. having covered a total mileage of 12,295 miles. Here, after much persuasion, the flight was called off by Schlee and Brock who, with the *Pride of Detroit*, sailed on the liner *Korea Maru* from Tokio on September 17th for San Francisco and home.

ACROSS AMERICA ON "THE WINGS OF PROGRESS"

AFTER a pleasant and uneventful trip to Curtiss Field on Long Island we put in three days giving *The Wings of Progress* her final grooming and inspection. Our compass was installed and "swung in" by the Pioneer Instrument Co., and a trusty little instrument it has proven to be.

The morning of the 19th (3:30 a.m.) brought forth a drizzling rain, mist and quantities of mosquitos from Jersey. Our planes were hauled out of the hangars and while the sky was still dark were "tuned up" preparatory to starting. Not until 8:00 o'clock was the visibility sufficient to allow a getaway but at that time the first of the 25 "B" planes zoomed off into the lead gray sky. Not the best of flying conditions to be sure as later events showed! This, however, was a race and not a business or pleasure jaunt as ordinarily conducted. Each plane took off at minute intervals, ours being fifth to leave.

Flying low through the mist we passed over sleeping Brooklyn, across lower New York Bay and the passing steamers and on to Staten Island and New Jersey. There the cloud and fog had rolled in, making navigation most difficult. Charley Meyers used all his ingenuity and flying ability in dodging in between the clouds and avoiding the fog. At times we would be forced back and have to seek a new direction to break through. Our course thus took us over New Brunswick and eventually down to Reading, Pa. where the clouds were high and allowed us clear vision ahead. Here we landed in a clover field to be sure of our location, and then once more took off for Bellefonte, Pa., our first control station. We were now way south of our course and had little hopes of making any showing (in time) for our first day's run. The long rides of the Alleghenies were now ahead of us extending north and south as far as the eye could see and across these lay Bellefonte. Laying a

By Thomas B. Colby



direct compass course, Charley gave the old OX5 the gun and about 9:30 we dropped over into a peaceful valley where lay Bellefonte basking in the sun. We were now past the clouds and bright sunshine lay ahead.

Imagine our surprise to find only one plane before us (a Pitcairn OX5 that later dropped out of the race) and by only one minute at that. Here we gassed up and were again flagged on our way to Cleveland over the air mail route. As we passed the airway night beacons from time to time we realized that our compass was holding us true to our course in spite of a bad head wind. About noon the glistening towers and blue waterfront of Cleveland came into view and before long we swooped down into the Cleveland Airport—the first plane in—

where several thousand spectators awaited our arrival.

Here more gas and oil (Texaco and Mobiloil "B", all free of charge) and on to Bryan, Ohio. Bad head winds and bumpy flying, but clear. A five minute stop at Bryan and on for Chicago over flat, prosperous, lake-studded, farm country. At Michigan City we took to the lake, flying low over the water and about one-half mile from the shore. Miles ahead we could see the white towers of Chicago looming out of the lake and towards there we shaped our course. The day was crystal clear in sharp contrast to our early morning's experience.

Near Bryan we were passed by Leslie Miller in an Alexander Eaglerock plane and kept just behind him all the way into Chicago, landing on the Municipal Airport one minute after him.

Here a tremendous crowd awaited our arrival not to mention scores of movie and press men. After placing fresh oil in our motor and "gassing up" for the next day, *The Wings of Progress* was wheeled into a nearby hangar and turned over to mechanics for adjustments that the motor needed. Thus ended a long and exciting day.

Through a mixup in daylight and Central time the college chum with whom I spent the night got me out of bed at 2:30, and in another hour we were again on the field in a pouring rain, half awake and rather low in spirit. But at 5:00 a.m. the clouds broke and by 5:30 Miller's ship took off with us a minute behind, into a clear cold sky. It was more like November than September, except that the trees were still green.

A direct compass course across Wisconsin and up the Mississippi River brought us into the St. Paul Airport just as Miller was flying out. We could plainly see that his ship was a trifle faster than ours, and unless

(Continued on page 464)

THIRTY-ONE HOURS IN A BALLOON

By

E. Demuyter

The Internationally Known Balloonist, Captain Ernest Demuyter, Four Times Winner of the Gordon Bennett Cup, Tells the Story of His Trip in the "Belgica" in the 1927 Gordon Bennett Race.



Captain Demuyter and the Gordon Bennett Cup which he has won four times

TO recount my aerial trip in the third contest for the second Gordon Bennett Cup is somewhat painful to me although the results were not inglorious.

The trip ended very abruptly in spite of the fact that the first thirty-one hours of the flight gave me every right to expect the best sort of finish. But man proposes and God disposes.

I compliment sincerely my American colleagues, Hill and Van Orman, for their excellent procedure. Their success once more confirms the known but often forgotten fact that those who are most scientific must win.

Their success must prove to the general public and make more clearly understood by the press of the large American cities that in these distance contests of lighter-than-air machines the ships are not the toys of the wind but rather are a species of aerial sailboat which may be maneuvered through space in accordance with the pilot's meteorological knowledge.

The weather conditions on the 10th of September were not very favorable. Without going into technicalities in this article, we may say, however, that the appearance of the second barometrical depression coming from Michigan was indeed unfortunate because of the danger of storms which it brought with it.

I can not thank sufficiently the organizers for all their preparations, which were really American, or for their cordiality.

On Saturday at 17:38 (5.38 p. m. Eastern time) we began the ascent, pushed by a light northwest breeze.

The national anthem, hand-shaking, wishes for success, floral offerings, delicate attentions—all these remain fixed in my pleasant recollections of the period before our departure.

My *Belgica* (whose third year of existence this is, and which won the first Gordon Bennett cup in its first year) was fully loaded. More than 800 kilos of ballast were aboard, 23 bags of 15 kilos each inside the basket, and 24 large bags of 25 kilos suspended from the outside. Five

bottles, of which four were filled with oxygen and one with hydrogen, were inside. One rubber raft, one radio set (supplied through the kind collaboration of the Radio Corporation of America), one bag of maps and several bags of rations, both solid and liquid, completed our equipment.

I took with me as passenger a sportsman in whom I had confidence, although this was his first aerial trip. He is the Belgian sculptor, Pierre de Soete, a brilliant artist and creator of many monuments beautifully depicting both sports and aeronautical ideas.

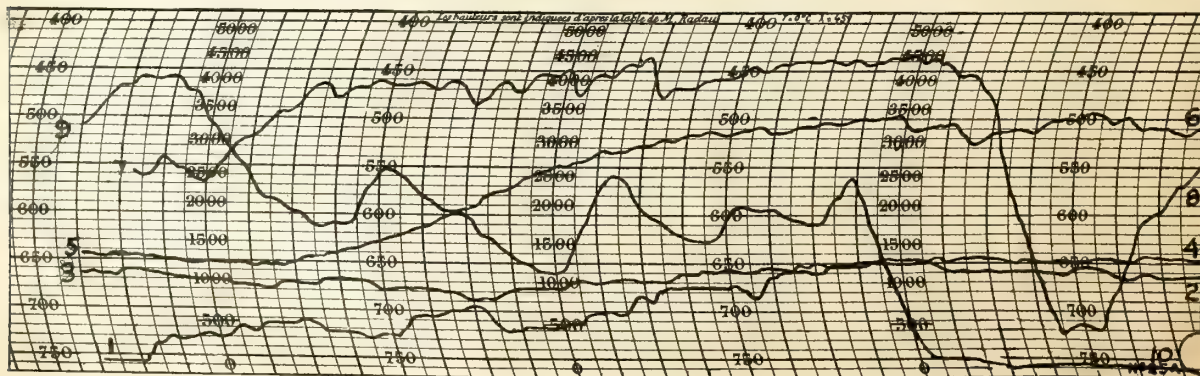
The first hours of navigation passed in trying out the atmosphere and its currents. Balanced alternately between 300 and 500 meters, I overtook five of the competing balloons. I was veering more to the south than they.

The Detroit River and a small part of the Canadian province of Ontario were covered in these earlier hours of the adventure. At 7 o'clock in the evening, at 340 meters alti-

tude, with a temperature of 22½ degrees, we began to cross Lake Erie. We had used 75 of our 800 kilograms of ballast.

The positions of the other balloons were taken one after another to tell us our deviation in direction from them. These changes in direction, which occur so rapidly, were sometimes surprising, although we had been navigating for only a short time. They demonstrated how many variations of position and direction were possible although we had not even touched the upper currents.

There was a possibility of making a very delicate maneuver, but unfortunately it presented too many hazards to put it into execution. At high altitudes predominating west winds probably would have permitted a balloon that could balance itself to work free from the zone of the Michigan depression's influence and lead it to the east and northeast where lie the states of New York and Maine. But it would have been necessary to sacrifice immediately from 350 to 450 kilos of ballast, that is, one half the amount at our disposal. Also, we would have had to cross



Graph from Captain Demuyter's recording barograph showing the altitudes reached on his 31-hour trip from Michigan to Georgia

two of the Great Lakes, Erie and Ontario, lengthwise, and this crossing probably would have had to be accomplished under rain. In view of all these obstacles, I did not carry out this tactic, nor did any of the rest of the contestants attempt it.

Lake Erie, which is really an inland sea, lay a thing of beauty under the rays of the setting sun. The *Belgica* flew over many ships, some heading for Detroit and others for Buffalo. An enormous marine traffic was below us in this region.

Unfortunately, about half past 8, occurred what we had feared. Flashes of lightning appeared in the regions toward which we were flying, that is, between the southeast and the southwest. It was absolutely necessary for us to avoid entering that zone which might be detrimental to our trip.

About 9 o'clock, I flew over the south shore of Lake Erie a few miles to the east of Port Clinton. We were then above the state of Ohio. By means of my radio set, I was in touch with the world, which was an appreciable relief for it enabled us to get valuable meteorological information. At a speed of 30 to 35 kilometers an hour, we were now traversing great stretches covered with forests among which, from time to time, small towns appeared. America! Impressive reflections are stirred. What power radiates from these vast regions which, in a few years, have become examples of civilization for mankind and which now were spread below us!

These aerial voyages offer an excellent way to study a country. They lay it out as a graphic map. No other plan exists which is so effective.

The radio station at Detroit was clearly audible and only occasionally did we get any static. Such electrical phenomena are always especially impressive to one suspended in the air in a balloon. Fancy! Cut off from every material connection yet communicating! We could hear a special concert put on for the contestants in this great race; it came from Detroit. We also received meteorological information, partly in French. Then there was a speech of encouragement to our American friend, Hill, a native of this beautiful, large city.

This speech was not long in bearing its fruit.

At 6 o'clock in the morning, after having heard the station at Chicago

Results of the 1927 Gordon Bennett Balloon Race

Contestants finished in the following order: No. 11, the Detroit, United States—E. J. Hill, pilot, and A. G. Schlosser, aide. No. 5, the Goodyear VI, United States—Ward T. Van Orman and Walter W. Morton. No. 7, the Lafayette, France—Georges Blanchet and Dr. George M. LeGallee. No. 14, the Barmen, Germany—Hugo Kaulen and Alexander Dahl. No. 8, the Belgicia, Belgium—Ernest Demuyter and Pierre De Soete. No. 1, the Hispania, Spain—Major Enrique Maldonado and Major Menito Molas. No. 10, the Munster, Germany—Ferdinand Eimermacher and Dr. Rudolph Predeek. No. 2, the Dux, Italy—Lieutenant Colonel Domenico Leone and Lieutenant Colonel Ugo Medori. No. 12, the Paris Bruxelles, France—Maurice Bienaime and Alexandre Veenstra. No. 15, the U. S. Army, United States—Captain W. E. Keppner and Lieutenant W. O. Eareckson. No. 13, the Wallonie, Belgium—Lieutenant Phillipe Quersin and Lieutenant Maurice Theis. No. 6, the Helvitia, III, Switzerland—Ernest L. Maag and Ernest Nageli. No. 9, the Rex, Italy—Major Eraldo Ilari and Captain Guiseppe Paonessa. No. 3, the Bee, England—Captain G. F. Meager and Squadron Leader R. S. Booth. No. 4, the Ernst Brandenburg, Germany—Dr. Reinhold Halben and Hugo Kaulen, jr. Start of the race—September 10, Detroit.

and verified it by compass, we could hear the far distant Shreveport, Louisiana, station. Its waves, despite the distance and the fact that we had no outside aerial, came in very distinctly. This proved that our flight had been southeastward. It was singularly impressive for us up there in the great aerial ocean to hear this station not far from the Gulf of Mexico.

In the early hours of the new day we sighted another contestant. He was the only one we were to see in all our journey. This confirmed the belief that our speed was greater than that of the other balloons.

We were traveling now over a sea of clouds and could not see the earth at all. We kept at the altitude of about 3500 meters because of the heat of the sun.

The hours always seem longer in the high levels, but soon the clouds separated and another landscape spread beautifully below us as we passed over the Allegheny Mountains. We already had been navigating about 20 hours; we were undergoing a temperature from 18 to 20 degrees, our expenditure of ballast, a little too high it seemed to us, had been nearly 450 kilograms.

This fairly large chain of mountains, about 2,000 meters high, is the only important rolling country running from the northeast to the southwest in the eastern part of the United States. Once across them, we were above a land of small towns of more or less importance, cities which we could see are developing rapidly, and well cultivated fields.

About a quarter of 6, Sunday afternoon, after 24 hours of flying, I decided, as is my habit, to near the ground in order to ascertain my location by the population.

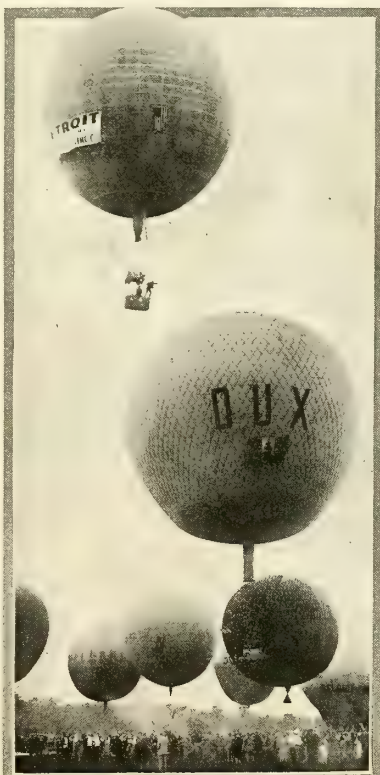
I found that we were in North Carolina not far from Charlotte, a town which I believed we had just passed on the west.

We descended normally 4,000 meters and arrived at about 15 meters with our guide rope unfortunately entangled, dragging on the ground. Automobiles seemed literally to spring from the ground on all sides.

Due to the hazards which our guide rope presented, and which could not be modified except by retrieving it, I had to avoid passing over telephone and electric wires.

In answer to my shouts, in spite of my poor English, I received the needed information. We were about 25 miles

(Continued on page 488)



Some of the entrants in the 1927 Gordon Bennett Balloon race, Detroit, Michigan.

AIR—HOT AND OTHERWISE

JUST how the change was brought about we do not know, but, having read the review he has written for that wisely anonymous book,

"The Great Delusion", we know that General Harbord must have been, to start with, Gen. Larboard. This book is so naval that it virtually denies the whole idea that man can fly at all. The General applauds this. He is snug harbored, now, as well as Harbord, for he is at the head of a great electrical communications company, engaged in radio transmission of urgent messages and naturally worried over any thought of air transmission of like messages.

We can readily imagine that strong pressure must have been brought upon this man of common sense and a reputation for public spirit before he could be induced to write such crude propaganda against aviation. The Radio Corporation of America must loathe the air mail thought and the General is wonderfully salaried by just that company.

Is it in consequence that he vividly endorses and enthusiastically swears to every word in this astounding volume that explains that airplanes and dirigibles cannot fly, that the men who create, operate and root for them are mad, that aviation has accomplished nothing (virtually it denies that Lindbergh flew across the sea) and that the airplane never can accomplish anything? "The Great Delusion", as endorsed by General Harbord, indicates that the good General is not military as he once was, or commercial as his present job would indicate, but naval, and especially we wish to state that we do not imply that he is navel as an orange is, but specifically call him naval as a propaganda is. You figure that out carefully and if you discover what I mean don't tell the General. He would be peeved.

This may be how the whole thing happened though we do not vouch for it:

When the naval enthusiasts of Europe and America, finding their perennial graft of jobs, distinctions and high construction and maintenance profits threatened by the result of aviation's unquestionable victory this summer, the Admiral of Propaganda may have called the press-agents together (ablest men in all the Navy are those press agents, chosen from and trained in the best ranks of The Follies' publicists) and said:

"You write a book, you lubbers, and you do it right. You show in it that airplanes can't fly and that if they could it would cause serious political complications, owing to traffic rules among the birds, and that if that difficulty could be solved, which it cannot, there still would remain the awful truth that the success of aviation would cause dreadful suffering for the helpless families of our Steel Trust directors. They've been worried ever since the Armistice, fearing that they'd never sell another shell. You get busy and you show that airplanes cannot fight and never did. Intimate that it was a fake that they were in the air during the World War, sensational reports to the contrary notwithstanding, or we shall never get another order for an armorclad. The public is beginning to be thoughtful. If it finds for sure that one bomb on a battleship is really like one swat on a fly we'll lose the finest graft in history. You've got to write a book, you press agents, you've got to write it quickly and it's got to be a geewhanddinger."

"Suremike, Admiral," replied the press agents. "We'll prove the Wrights were crazy. We'll write a book and

"The Great Collusion"

By Frank A. Tichenor

call it 'Pests of the Air: Watch Out For Them.'"

"They'd think you meant mosquitoes and would get out the kerosene"—the

Admiral of Propaganda answered. "You've got bootleg enough in you at present to burn freely without oil. Call it 'The Great Delusion.'"

"What does 'Delusion' mean?" asked the Chief of the Press Agents, a highly educated graduate of our glorious Annapolis who never wished to go to sea.

"Pipe dream, silly."

"Who'll sign the book? We gotta have an author."

"Sure. Don't we know that? He's been handpicked all ready. He's an Englishman, Neon. And we've got to have a review by a Yank. We've selected him also. He's an expert in electrical communications, and so naturally loathes aviation just as much as any naval man could do. Hop to it, now, my hearties, you get busy."

SO there's what may be inside dope on that which might be suspected as the origin of the volume which has recently attracted some attention from the easily befooled. "The Great Delusion" is issued under the pen name, "Neon." It becomes obvious to the discerning that the printer dropped his stick and lost some of the type in this. There must have been more to it, originally, as follows: "NONSENSE". "NEON" hasn't even half the letters in that word. Printers are so careless.

In the proceedings of the United States Steel Armor Plate Trade Stimulation Journal, known popularly as the Naval Institute Proceedings, appears the book review by General Harbord which may have been arranged for as we intimate. The General, retired as Chief of Staff, U. S. Army, before he was made president of the Radio Corporation of America, so that part is all right. The corporation is a mighty institution which naturally believes in keeping up the telegraphic rates and loathes the thought that air mail carries long messages by plane almost as fast as radio or wires can carry brief ones and at a fraction of the cost.

Beginning as an officer in the Army, brave and splendid and able to fight anything but aircraft, he still thinks along the ancient lines. His friends among the officers of the old school are numerous and dear to him. He does not like to see the tactics they have spent their lives in learning gassed fatally by bombs dropped from the air by progressives full of new ideas.

As a member of the Morrow Board he was subject to all the propaganda which the shipbuilders, steelmakers and non-flying naval and military men could bring to bear on him, and we cannot feel surprised that he looks squintingly at aviation. The Radio Corporation which now employs him at a startling salary is an interesting institution. Its attitude toward air is understandable. The General Electric holds 248,106 of its shares, with 200,000, in 1923, owned by the Westinghouse Electric and a nice block of almost 50,000 shares owned by the National Bank of Pittsburgh, greatest steel town in the world and largely nurtured by the profits from naval armor plate making.

In his review of "The Great Delusion" the General endorses the idea that aircraft is a total loss. He quite agrees with that distinguished author, Mr. Nonsense, writing as Mr. Neon, that planes and dirigibles did nothing in the war except to get themselves in trouble and that since the war in military

(Continued on page 479)

ENGLAND WINS SCHNEIDER RACE

ENGLAND captured the Schneider Trophy with a magnificent victory and broke all speed records in the Schneider seaplane speed race at Venice, Italy, on September 26th. Lieutenant S. N. Webster flying a Supermarine-Napier S-5 monoplane averaged 281.488 miles (453.282 kilometers) over the 217-miles course. He covered the distance in the official time of 46 minutes, 20.08 seconds.

Flight Lieutenant O. E. Worsley, in another Supermarine-Napier S-5, came in second, covering the course in 47 minutes, 46.75 seconds, averaging 272.912 miles per hour (439.472 kilometers).

Lieutenant S. M. Kinkead, the other British entry, in a Gloster-Napier biplane, made the highest speed of the race over one lap—289.014 miles per hour. This is the highest officially recorded speed ever reached by a human being.

Lieutenant Webster's average speed, 281.488 miles per hour, exceeds the fastest speed ever made by a landplane, which record of 278.480 miles per hour was made by Warrent Officer Bonnett of France in 1924.

Lieutenant Alford J. Williams, America's only entrant, withdrew his entry because of lack of time to complete his preparations and ship his plane to Italy. The technical details of his racing seaplane, designed and built under his personal supervision, were given in the September AERO DIGEST. His was a private venture.

This left the race to the three British and three Italian contenders. England built six racers for the event, of which one, the Short-Bristol "Crusader," cracked up on a trial flight. It was the only plane equipped with an air-cooled motor.

The race was scheduled for Sunday afternoon, September 25th, but due to bad weather and a rough sea, it had to be put off until the next day. A slight drizzling rain fell all the next morning and it was doubtful until nearly the last minute whether the race would start that day, but in spite of the cloudy sky, the officials de-

cided that it was possible to race and Lieutenant Kinkead took off first, the others starting after at five-minute intervals.

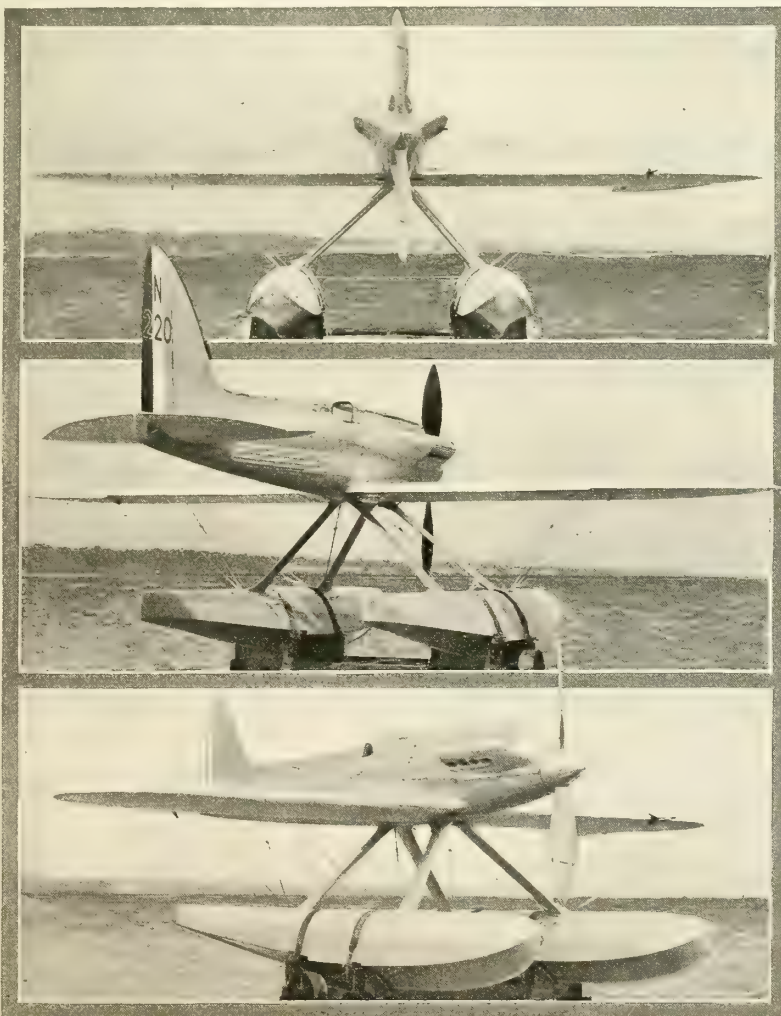
Major de Bernardi and Captain Ferrarin, both flying Italian Macchi racers with Fiat engines, were forced down before half of the first lap had been finished. Lieutenant Kinkead was forced out in the sixth. Captain F. Guazzetti, the other Italian entry, was well in the rear when towards the end of the race he was obliged to give up, leaving the field to the Englishmen. All of the contestants landed safely, without accident of any kind.

Year	Trophy Won By	Speed—Miles per Hour
1913.....	France	45.25
1914.....	Great Britain	86.
1919.....	(Contest annulled)	
1920.....	Italy	106.7
1921.....	Italy	110.9
1922.....	England	145.7
1923.....	United States	177.38
1925.....	United States	232.57
1926.....	Italy	246.49
1927.....	Great Britain	281.488

The above list shows the tremendous advance in aviation since 1913, when the race first started, and the trophy was won with a speed of 45.25 miles per hour. Fourteen years and over 236 miles per hour speed gained. A little over 35 miles an hour was gained over Major de Bernardi's speed last year.

Over some of the laps the biplane and monoplane, powered with the same engine, showed the same speed. Should they show the same speed on a straight-away course, the highly debated question of the biplane versus the monoplane becomes still more entangled and our American practice of building biplanes for high speed ships, may be proven justifiable.

The victory of the Macchi racers (Cont. on p. 485)



The Supermarine Napier S-5 monoplane which won the 1927 Schneider race.

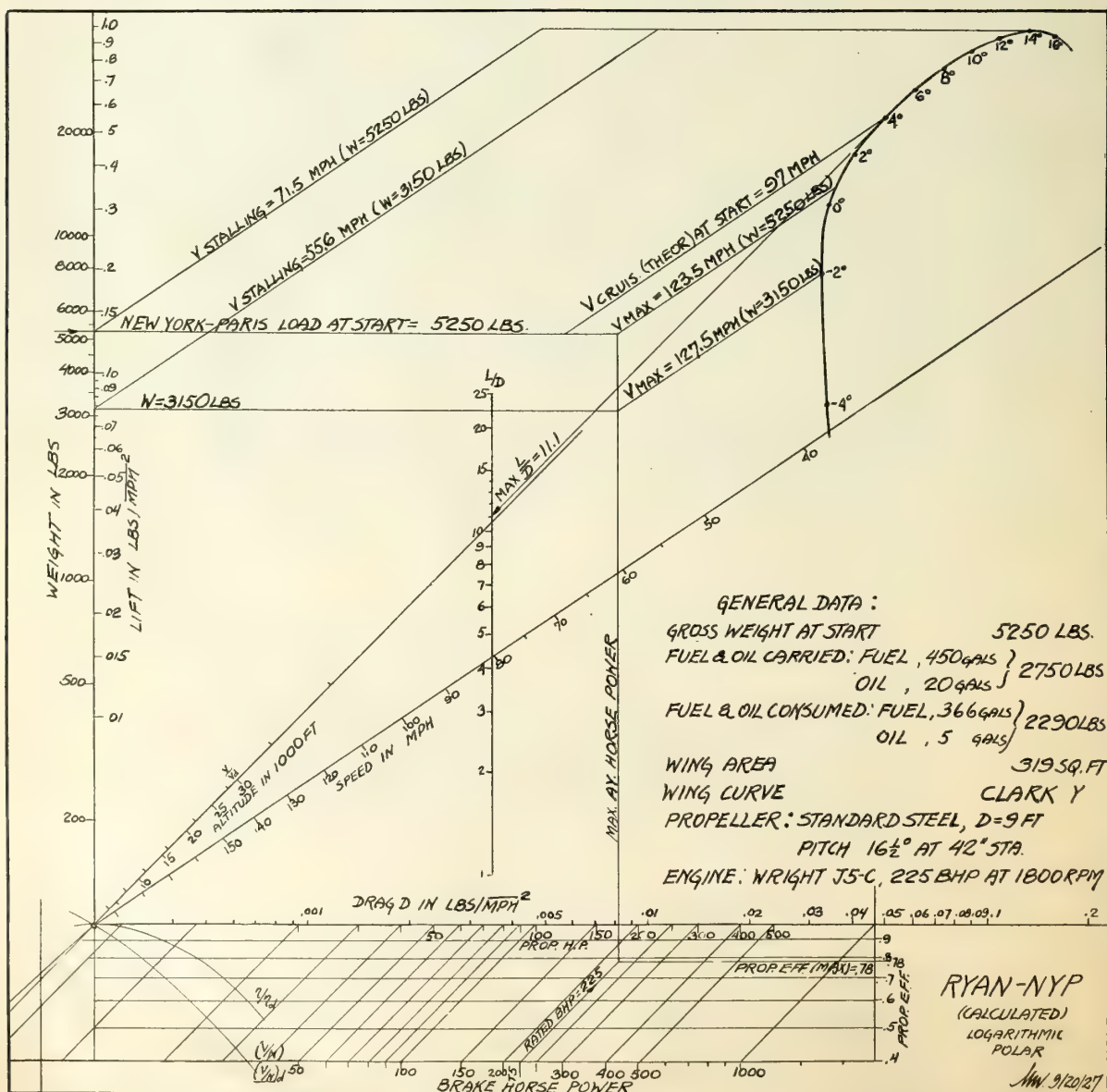
ENGINEERING ASPECTS OF LINDBERGH'S TRANSATLANTIC FLIGHT

THE unfortunate termination of several recent attempts to cross the Atlantic and Pacific oceans has aroused some criticism and has resulted in some loss of faith by laymen in the possibilities of aviation. While the capabilities and limitations of aircraft are known to engineers the general public views the subject as an uncertain adventure and overlooks certain essential points which are important for the successful outcome of such serious enterprises. Of all the planes which crossed and failed

By Dr. Michael Watter

Upon Dr. Watter's request this article was submitted to Mr. Donald Hall, designer of Colonel Lindbergh's Ryan NY-P airplane, to obtain his permission to use data on the "Spirit of St. Louis." Mr. Hall endorses its publication and points out that the general decrease of cruising speed over the route as flown was somewhat lower than assumed in the article. This indicates that at the first part of the flight the plane was flown closer to theoretical performance than assumed in this article. The resulting difference in distance is negligible.

to cross the oceans, none was built to cross it with an engineering degree of safety known to be required on routine or everyday performance; they were built and flown primarily to show the public that airplanes of to-day can fly through rain, snow, in darkness over vast oceans and land safely at record distances from the points of departure. Assuming that the plane is not specially built for emergency landing and navigation in water, I will analyze briefly the essential requirements necessary for a reason-



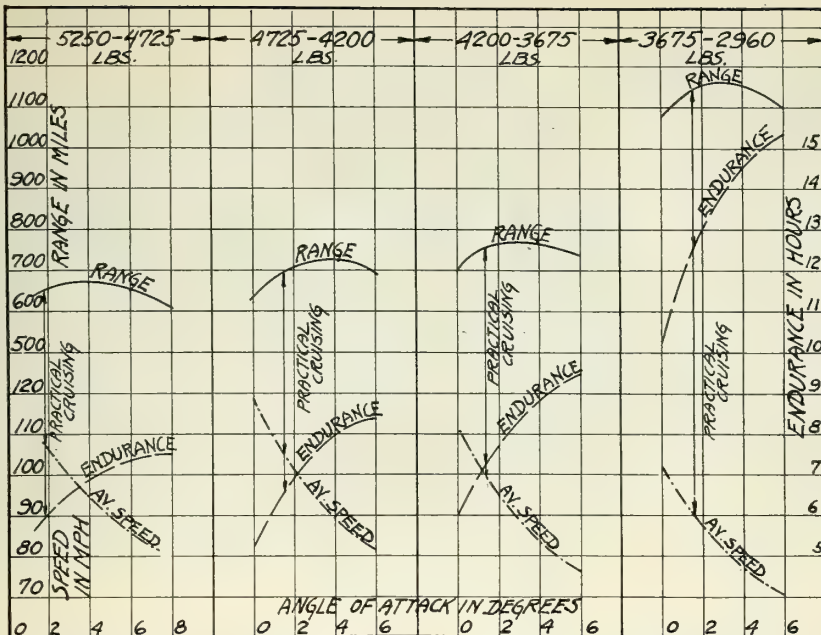
Logarithmic polar diagram of Ryan NY-P airplane showing sea level performance for two conditions of gross flying weight

able degree of safety and therefore justifying a pioneering flight of such importance. The factors to be investigated are: the plane, possible range, take-off conditions, navigation and flying weather conditions and personnel.

The plane must be strong, well designed, capable of safely taking off with the unusually great weight necessary on such flights. It must be verified that the balance of the plane is correct and that it has reasonably good flying performance when fully loaded. It should not have experimental equipment and only well designed and tried parts should be used. Since the power plant installation is necessarily complicated it must be thoroughly tried out in a flight of comparatively long duration under conditions somewhat similar to those which may be encountered on the intended flight. Such a test is vital in order to check the power plant installation and verify flying conditions. A long cross-country flight is essential also for the checking of navigating instruments.

The plane's range must be carefully calculated and trial flights made to verify the fuel consumption of the engine. A reasonable margin should be allowed so that in case of adverse winds fuel would be provided sufficient to reach a safe landing place.

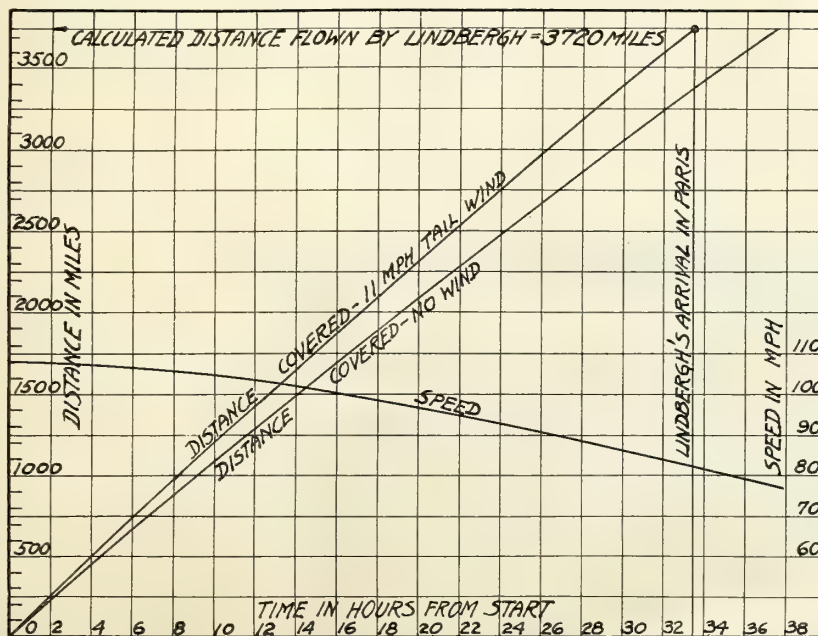
Take-off is a very important and a dangerous phase of such flights. Care must be taken to clear and protect the runway from curious spectators. It is necessary to have a clear landing field ahead of the plane so that in



Curves of range, endurance and average speed for four conditions of loading. Points found at vertical lines marked "practical cruising" indicate range and endurance at what is considered best compromise between practical consideration and theoretical performance.

essential to decide upon a favorable time to start the flight.

Besides the technical ability to arrange a flight the pilot must be capable and fit mentally as well as physically. He must be capable of flying the plane without any visible points of reference, at night, in fog, over land and over water. This is not a simple matter and a pilot must have special training to be able to fly the plane by instruments alone. All the conditions enumerated above are admitted to be insufficient for a safe crossing of the ocean by regular commercial airplanes but they were sufficient for a pioneering flight where a certain amount of chance was unavoidable.



Curves showing the variation in practical cruising speed against time from start and also distance covered with no wind (air distance) and with a total wind of 11 m.p.h. intensity; vertical line indicates time of Lindbergh's arrival in Paris.

case of engine failure or in case it becomes necessary to stop, the pilot will have as much clear space as possible to execute the correct maneuvers.

The plane must carry the usual navigating and flying instruments, the most important being the magnetic compasses, drift and speed indicator, earth inductor compass, turn and bank indicator, air speed indicator, and altimeter.

A thorough study of weather conditions is essential to decide upon a favorable time to start the flight.

Besides the technical ability to arrange a flight the pilot must be capable and fit mentally as well as physically. He must be capable of flying the plane without any visible points of reference, at night, in fog, over land and over water. This is not a simple matter and a pilot must have special training to be able to fly the plane by instruments alone. All the conditions enumerated above are admitted to be insufficient for a safe crossing of the ocean by regular commercial airplanes but they were sufficient for a pioneering flight where a certain amount of chance was unavoidable.

One must remember that it was a pioneering flight—a challenge to skeptics and to those who were unaware of the advancement of aviation. Lindbergh's plane and all his preparations fulfilled every reasonable requirement of sound engineering. His airplane was designed to stand the strain and to cover the desired range. He made numerous tests of the plane's ability to take off with loads up to 4250

(Continued on page 483)

PROGRESS OF DISTANCE FLIGHTS

AMERICA - EUROPE

MISS RUTH ELDER of Lakeland, Florida, and Captain George Haldeman, her pilot, are preparing for a flight across the Atlantic in the Stinson monoplane *American Girl*. The flight is backed by Wheeling, W. Va., business men.

Tests of the plane have been completed and they expect to hop off from Roosevelt Field, L. I., for Paris as soon as the weather is favorable. They will follow the steamship lanes instead of the Great Circle course flown by Lindbergh on his New York to Paris flight.

On September 12th, the *American Girl* hopped off from Tampa, and after a stop at Wheeling, arrived at Curtiss Field on September 14th. The Stinson plane is of the same type as Schlee and Brock's *Pride of Detroit* and Schiller and Wood's *Royal Windsor*. The Stinson monoplane was described in detail in the August issue of *AERO DIGEST*.

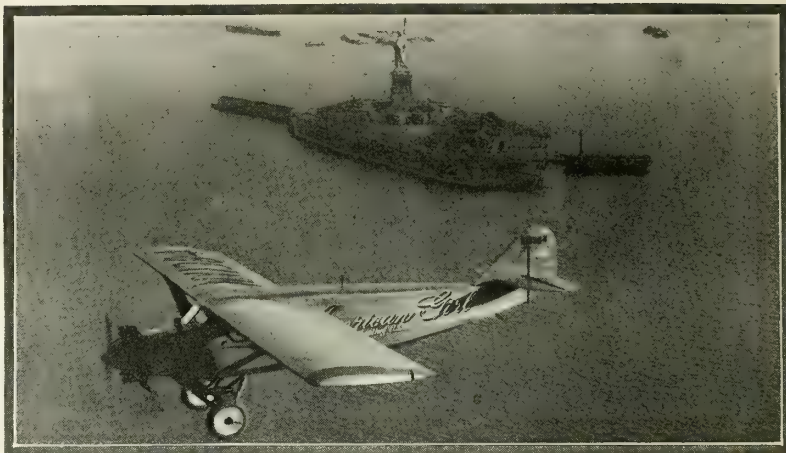
Miss Elder has passed her examination for a pilot's license and will be rated as co-pilot on the flight.

CAPTAIN RENE FONCK has decided to defer the transatlantic and distance flights that he had planned to make in his new Sikorsky biplane *Ville de Paris*. Previous to the transatlantic attempt, it was planned to make a long-distance over land flight from New York to the Pacific Coast.

Delays in preparation and testing caused Lieutenant Lawrence Curtin and Ensign Steve Edwards, the two Navy men who were to have accompanied Captain Fonck as navigator and radio operator, to withdraw their aid as their leaves of absence from the Navy had terminated.

The plane will be dismantled and stored at the Sikorsky plant until next spring when Captain Fonck intends resuming his flight activities. The plane is described in detail elsewhere in this issue.

Mr. and Mrs. Robert L. Dodge of Mill Neck, L. I., are the backers of the flight.



P & A photo

The Stinson monoplane, "American Girl", over New York Harbor

MISS FRANCES GRAYSON of Forest Hills, L. I., N. Y., will attempt soon to cross the Atlantic in a Sikorsky amphibian. Wilmer Stultz, navy flier, will be her pilot and Bryce Goldsborough, one of the best civilian navigators in the country, her navigator.

Test flights of the amphibian, which was described in the September issue of *AERO DIGEST*, are now taking place and are proving very satisfactory.

Mrs. Aage Ancker of Aiken, S. C., and Miss Grayson are financing the flight.

OLD GLORY took off from Old Orchard Beach, Maine, at 12:23 p. m. Eastern Standard Time, on September 6th on what was intended to be her 4,100-mile non-stop flight to Rome. J. D. Hill was at the controls, Lloyd W. Bertaud, co-pilot and navigator, and Philip A. Payne, managing editor of the *Daily Mirror*, as passenger. The plane was a stock model FVII Fokker monoplane powered with a 450 h.p. air-cooled Bristol-Jupiter engine. Its weight empty was 4,639 pounds and its total load for the flight to Rome was 12,500 pounds.

Ideal weather conditions were predicted all the way to Rome. There was a low pressure area 2,000 miles from Newfoundland and a light rain off the French Coast but the pilots counted on flying south of the low pressure area and hoped that the rain would be over by the time they reached France.

Old Glory headed northeast along the coast of Maine for Cape Breton, St. John's, Newfoundland and Cape Sable. From here they planned to head straight for Bordeaux, avoiding England and Ireland and thus escaping the possibility of fog and sleet. The course chosen was a little longer over the sea than the Great Circle course but was justified by lessening the hazards of cold and sleet to the northward.

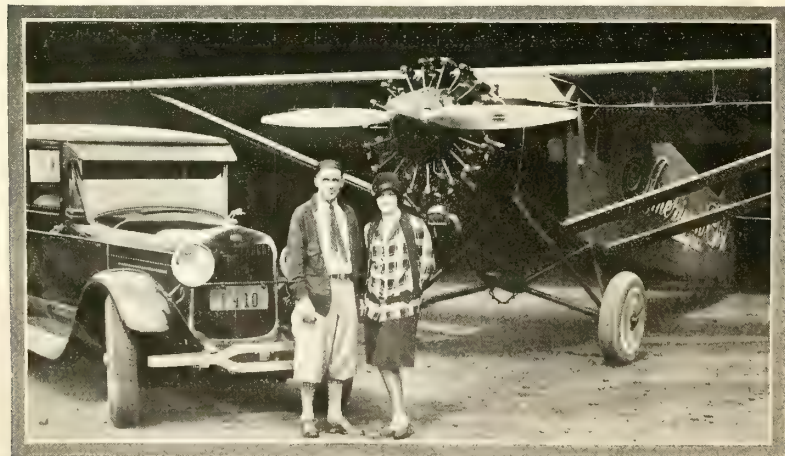
At 4 a. m. the next morning an S O S call was received from *Old Glory* by the liners *Carmania*, *Lapland* and *Transylvania*. The position of the plane at this time was estimated to be 49:50 north, 41:15 west. The liners searched for the missing plane through the rough seas along the course and around her approximate position but without result.

The *S. S. Kyle*, the Canadian ship chartered by the *Daily Mirror* to make the search, located a portion of the wreckage of *Old Glory* at latitude 51:17 north, longitude 39:23 west, at 4:20 p. m. September 12th, but there were no signs of the crew. The plane had apparently drifted about 100 miles northeast of the position the S O S was sent from. Only part of the plywood wing and a portion of the landing gear and fuselage were found.

CANADA - ENGLAND

AFTER two unsuccessful attempts to fly from London, Ont., to London, England, Captain Terry Tully and Lieut. James Medcalf hopped off in the *Sir John Carling* from the airport at Harbor Grace, Newfoundland, at 7:25 a. m. Eastern Standard Time, September 7th.

On their first attempt to fly from London, Ont., Tully and Medcalf were forced back by bad weather. On the second attempt they



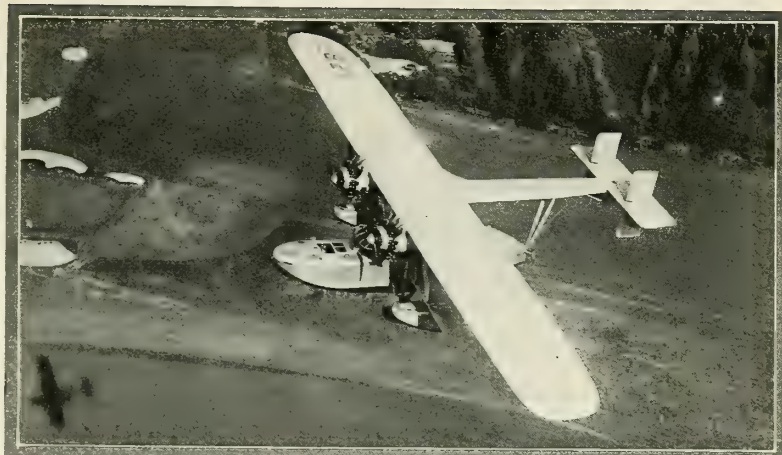
Miss Ruth Elder and Captain George Haldeman who plan to fly across the Atlantic

had flown beyond Prince Edward Island when they encountered such heavy fog that they feared they would not locate Harbor Grace and flew back over New Brunswick, landing in Washburn, Maine. As soon as the weather permitted they went to Harbor Grace from whence they took off on September 7th.

They were last seen heading across the Atlantic at Cape St. Francis, thirty miles from their starting point. As they have not been heard from since, it is assumed that the plane was forced down in the Atlantic and was lost.

The *Sir John Carling* was a Stinson-Detroiter monoplane equipped with a Wright Whirlwind engine. No radio was carried.

Bad weather conditions, similar to those which faced *Old Glory*, were reported in the plane's path.



Miss Frances Grayson's Sikorsky amphibian flying over Long Island. P & A photo

THE *Royal Windsor*, a Stinson-Detroiter monoplane, piloted by C. A. "Duke" Schiller and navigated by Phil Wood, was forced down at St. Johns, Quebec, at 8 p. m., September 2nd, after starting from Windsor, Ont., at 10:18 that morning bound for Windsor, England.

On September 6th they took the plane to Old Orchard, Maine, preparatory to another attempt at the non-stop flight across the Atlantic. They were persuaded, however, by the Canadian Government to abandon their transatlantic flight. They decided to enter the New York-Spokane non-stop air race.

ENGLAND - CANADA

CAPTAIN LESLIE HAMILTON, Colonel Frederick F. Minchin and the 62-year old Princess Lowenstein-Wertheim left Upavon, England, at 7:32 a. m. on August 31st (2:32 a. m. New York Daylight Time) in the *St. Raphael*, a Fokker monoplane with Bristol-Jupiter engine, on their flight to Ottawa, Canada. The last sight of the plane was over the north coast of Galway Bay, Ireland, when it passed out to sea towards America at a speed of not more than 70 m. p. h. No word of their fate has been received since.

A stormy area was reported off the coast of Ireland and extending for several hundred miles out to sea, and they had headwinds to buck and foggy, rainy weather and storms in their path most of the way. Dense fog surrounded Newfoundland at the time the plane was due there, which, if the plane had

succeeded in crossing the Atlantic, might have caused them to pass inland without being sighted, especially if off their course. The plane carried 800 gallons of gasoline which was estimated to be sufficient for about 39 hours of flight.

IRELAND - AMERICA

CAPTAIN ROBERT H. M'INTOSH and Commandant James C. Fitzmaurice, commander of the Irish Free State Air Force, started for New York at 1:36 p. m. (Irish time) September 16th from Baldonnell airdrome, ten miles from Dublin, Ireland.

The *Princess Xenia*, a Fokker monoplane with Bristol-Jupiter 500 h. p. air-cooled engine, is similar to the *St. Raphael* and *Old Glory*, both of which were lost this summer on transatlantic flights. The plane was named in honor of Princess Xenia of Greece, wife of William B. Leeds, chief financial backer of the flight.

Four and a half hours after the take-off they landed back on the beach at Ballybunion, County Kerry. Rain, fog and headwinds were all against them and they decided it would be suicidal to continue the flight. After emptying one gasoline tank to lighten their load, the fliers flew at thirty feet above the sea along the coast until they sighted the beach on which they landed.

The plane has since been flown back to Baldonnell airdrome where it will be overhauled and made ready for another attempt to cross the Atlantic.

ENGLAND - NEW YORK

CAPTAIN F. L. COURTNEY with R. F. Little, engineer, Flight Lieut. W. M. Downer, navigator, and Elwood Hosmer, passenger, hopped off in the Dornier-Napier *Whale* flying boat at 6:26 a. m. on September 3rd from Plymouth, England, whence he had flown the evening before from Southampton, enroute for the Azores. From the Azores they planned to fly to Newfoundland and from thence to New York.

Fog, squalls, heavy rains and headwinds caused them to give up hope of landing at the Azores before dark and, as there are no night landing facilities there, they set their course for Spain instead. They landed at 5:30 that night in the bay at Corunna, Spain.

As his plane was badly damaged in landing at Corunna, Courtney will renew his attempt in another flying boat of the same type when weather conditions are favorable.

COPENHAGEN - NEW YORK

ERNST UDET has begun test flights on two specially constructed Rohrbach "Robbe" type hydro-airplanes. Should the tests prove satisfactory, Udet, with two crews of three each, plans to fly to New York this fall or next spring in easy stages by way of the Azores, Bermudas or Halifax.

The plane is equipped with nineteen gasoline tanks. It has two Burmeister-Wain engines, totaling 1,820 horsepower, and is capable of flying 250 kilometers hourly.



"Old Glory" flying over the Atlantic at an altitude of 800 feet passes the steamship "Leviathan."

FRANCE - AMERICA

DIEUDONNE COSTES and Lieutenant LeBrix in their Breguet 19A2 special biplane *Nungesser-Coli* are prepared to start their Paris-New York flight as soon as the weather permits. They will fly via Dakar, Africa and Pernambuco, Brazil. Floats have been fitted to their plane.

PAUL TARASCON and his Bernard monoplane *Yellow Bird* are still awaiting favorable weather for their New York hop. The Bernard plane is a full cantilever high wing monoplane powered with a single Gnome-Rhone-Jupiter engine.

THE flight of Leon Givon and Pierre Corbu in the Farman *Bluebird* was cut short by fog shortly after their take-off at 6:32 a. m., Paris time, September 2nd, from Le Bourget. Within four hours the pilots had returned to the field. They were not able to get above 1,000 feet with their load of 12½ tons and it would have been very dangerous to fly at that altitude blindly through dense fog.

The fliers are anticipating another attempt.

GERMANY - AMERICA

LIEUTENANT OTTO KOENNECKE, accompanied by Count George Solms-Laubach, chief financial backer, and Johannes Hermann, radio operator, took off from Cologne at 2:22 p. m. (German time) September 20th in his Caspar biplane *Germania* enroute to America via the East-

ern route.

Angora, Turkey, his first stop, was reached at 8:30 the next morning, having flown the 1875 miles in less than 18 hours.

On September 24th, Koennecke hopped off for Basra, Irak, at the head of the Persian Gulf, 1,050 miles.

He landed in Bagdad on September 27th. In the meantime considerable anxiety was felt as no word was received concerning his whereabouts since his departure from Angora three days previous. Lieutenant Koennecke said his delay in reaching Bagdad was due chiefly to having to make a wide detour according to instructions from Turkish authorities, and having landed in Aleppo enroute.

From here he plans a non-stop flight to Karachi, India, thence to New York by way of Tokio, Sakhalin Island, Alaska, San Francisco and Mexico City.

FRIEDRICH LOOSE, one of the *Bremen's* pilots on its recent unsuccessful transatlantic flight, is planning to try another transatlantic hop to New York in a three-motored G-24 Junkers plane, built in Malmoe, Sweden. Herr Starke, of the Luft-hansa testing station at Kiel, will accompany him.

The North Sea island of Norderny will probably be their starting point. Their plane is one of the 12-passenger Junkers, remodeled and equipped with twin floats. The Junkers Corporation states, however, that they have no direct interest in the flight.

having sold the plane some time previously to a North German company.

The route of the flight will be by the way of Lisbon, the Azores or Bermuda.

THE "COLUMBIA" ENDS
DISTANCE FLIGHT

THE Bellanca monoplane *Columbia* with Captain Walter Hinchcliffe, pilot, and Charles A. Levine, owner of the plane, landed at Vienna on its intended non-stop distance record breaking flight, instead of India as intended.

Hinchcliffe and Levine took off with 384 gallons of gasoline in the *Columbia's* tanks from the Cranwell airdrome, London, England, at 8:07 a. m. September 23rd. Heavy rain, low visibility and failure of the gasoline feed tube to the engine caused the air-men to abandon their flight at Vienna after being in the air about 9 hours.

MOSCOW-TOKIO-MOSCOW

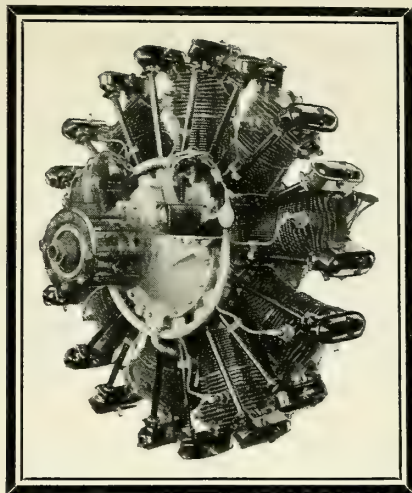
THE Soviet flying ace, Sheshtakoff, has completed his Moscow to Tokio to Moscow flight covering 20,000 kilometers in 150 flying hours. The trip was accomplished within a month.

The plane's name *Our Reply*, has significance in connection with the Soviet Union's country-wide campaign conducted under the watchword, "Our answer to Chamberlain". (This refers to the breaking off of diplomatic relations with Russia by Great Britain, in which Sir Austen Chamberlain, British Foreign Secretary, had an important part.)



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Here is the unrivalled trans-oceanic record of the Wright Whirlwind Motor to date. In each of these flights the Wright Whirlwind Motor used was equipped with Bohn Ring True Master Rod Bearings and Crankshaft Rear Bearings.

Commander Byrd's epochal flight over the North Pole.

World's record flight of 51 hours by Chamberlin and Acosta.

Lindbergh's Flight from New York to Paris.

Chamberlin-Levine Flight to Kottbus, Germany.

Commander Byrd's Flight to Ver-sur-Mer, France.

Maitland-Hegenberger Pacific Flight to Honolulu.

Arthur C. Goebel's winning flight in the Woolaroc—Oakland to Hawaii

Martin Jensen in the Aloha—2nd in the Dole Flight—Oakland to Hawaii.

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BOHNALITE

ANALYSIS OF WEATHER CONDITIONS ON RECENT TRANSATLANTIC FLIGHTS

THE historical long distance flights of American aviators during the past few months have been so close together that the enthusiasm about one hardly had time to subside before the world was thrilled by the next. Such a sequence of great aerial achievements has led a large percentage of the people to believe that nearly all of the problems of the air have been solved definitely and that only minor details have to be worked out before transoceanic aerial lines are commercially practicable. Certain pessimistic reactionaries take exactly the opposite viewpoint and claim that the courageous pioneering flights of this summer's crop of aerial visitors to Europe are nothing other than "stunts" accomplished more by luck than anything else.

Neither attitude is correct. In order that we may not be misled by the over-enthusiastic views of the optimists or the pessimistic statements of the mental dyspeptics let us analyze in detail the conditions that governed the flights of Nungesser, Lindbergh, Chamberlin and Byrd.

The Flight of Nungesser and Coli

In this analysis the following assumptions are made: first, that the French aviators were not forced down in mid-Atlantic by engine trouble, stress of weather, or other emergency; and, second, that the confirmed sighting of the *White Bird* at the mouth of the Shannon River indicated that the navigator, Coli, was carrying out his announced intention of following a modified great circle course to take advantage of weather conditions. The course that Coli started to follow was a great circle course from Paris to Lat. 55° N., Long. 20° W., and then to Lat. 55° N., Long. 40° W. and from this spot in mid-ocean a second great circle course to New York City. One point that is rather important is the fact that a great deal of the pessimism about their fate was caused by the failure of ocean steamers to sight the plane. When it is considered that the route they probably followed being so far to the

By
Lieut. Logan C. Ramsey, U.S.N.
and
Lieut. Earle H. Kincaid, U.S.N.

Article courtesy of U. S. Naval Institute Proceedings, Charts, made from information furnished by U. S. Weather Bureau, courtesy N. Y. Times.

north of the usual transatlantic steamship lines crossed only the lesser traveled Canadian routes of Malin Head to Montreal and New York to Scotland Firth in only two points, and these were in the following positions: Long. 21° W., Lat. 54° 30' N. and Long. 26° 10' W., Lat. 54° 50' N., it is not strange they were not sighted.

However, by following these courses Coli believed that he would insure favorable winds through his entire route and would pass to the northward of an atmospheric depression just off the coast of Newfoundland. This probable assumption could have been based upon weather advices from the United States Weather Bureau to the effect that he would have favorable winds in pursuing such a course, which assumption was entirely justified by actual conditions.

The latest information received from Paris seems to indicate that, while Nungesser had the benefit of the previous day's weather map of the American side of the Atlantic, he was without the latest information obtainable on this side on the day of his departure due to unfavorable reception conditions which broke down radio communication.

If this be correct and the French aviators were not forced down, the following is a description of conditions probably encountered. After leaving Paris a gentle following wind of approximately twelve miles an hour aided them for about the first third of their journey. In about Long. 31° W. the wind began shifting slightly to the south-eastward and increased in force gradually until darkness. Up until this time a navi-

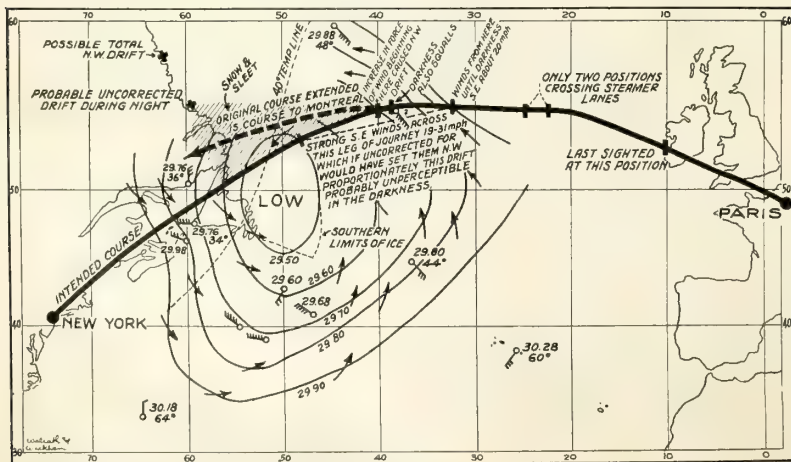
gator of Coli's known ability would be taking into consideration the northward drift due to the wind and would make allowance for it, thus maintaining his exact course.

At about darkness they began to come under the influence of atmospheric depression off the coast of Newfoundland which had not moved to the east as much as they probably hoped. A little while after darkness, still assuming them to be carrying out the modified great circle course, they would have changed their course to the southward. However, a gradual increase of wind which might have been imperceptible in the darkness and which was encountered about this time, may have blown them off their intended course to the northward. If the flyers continued they would have come close to the center of the depression but would have still had favorable winds. From darkness to dawn they encountered freezing temperatures, sleet and snow. The increase in the velocity of the winds, the lowering clouds and intermittent squalls might have prevented them from following the intended course, or they may have shifted the course at this point to the northward purposely to avoid the storm's center. In addition, they had announced that in case of bad weather they might change their destination from New York to Montreal.

In either of these two cases, still assuming them to be in the air, they probably encountered the coast of Labrador about midnight Sunday night or shortly after. It is well to call attention at this time to the fact that, passing close to the center of an atmospheric depression, the clouds would be low and, if flying underneath as they undoubtedly were, they would be flying at an altitude not much greater than 1,000 feet. Due to the decrease in atmospheric pressure from that obtaining in Paris when the flight began, their altimeter would give a false reading of from 1,000 to 1,700 feet, depending upon the barometric pressure they actually encountered. What this actual pressure was we can only estimate, but it is quite possible that their altimeter may have indicated a height of 3,000 feet when in reality they were probably flying less than 1,500 feet above the water.

In the darkness, they probably were not expecting to sight land so early and might have passed over the coast line and proceeded inland without knowing it.

In this case, quite a number of possibilities are apparent: first, that they may have continued on until daylight and discovered themselves inland over an unknown country; second, they may have been forced down by stress of weather inland; third, they may have crashed into the side of a mountain. Labrador, along the part of the coast they probably encountered, is a plateau 500 to 2,000 feet high rising rather abruptly within a few miles of the coast. Inland it is a rolling country and many ridges and hills rise 500 feet or more above their surroundings, but in the depressions between the ridges are



many lakes. The entire country is well wooded.

Along the coast of Labrador as far south as Cape Race, fields of ice, icebergs and growlers were present and Belle Isle Strait was still blocked with ice. In case the French aviators were forced down in this area, their chances of survival are small. If they encountered the coast of Labrador in the darkness, it is quite probable they crashed against the side of a mountain, as did Major Martin on the Army's 'Round-the-World Flight, particularly in view of a false indication by their altimeter due to the decrease in barometric pressure.

Another viewpoint which is gaining adherents, as time passes and no trace of the French aviators or their plane is brought to light, is that they encountered an area while passing near the storm center in which frozen precipitation weighted down the plane.

When the surface temperature is close to freezing as it was over a part of their probable track, any precipitation at moderate altitudes is apt to be encountered in the form of sleet or snow. A plane flying through such areas is rapidly coated with frozen precipitation and soon becomes loaded down to a point where it cannot remain in the air.

The experiences of all aviators who flew over the Atlantic subsequent to this flight seem to strengthen the idea that the *White Bird* was forced down by the weight of caked ice on her wings and fuselage for, despite the fact that they flew later in the year when temperatures were generally milder, Lindbergh, Chamberlin and Byrd all encountered freezing temperatures in the upper air.

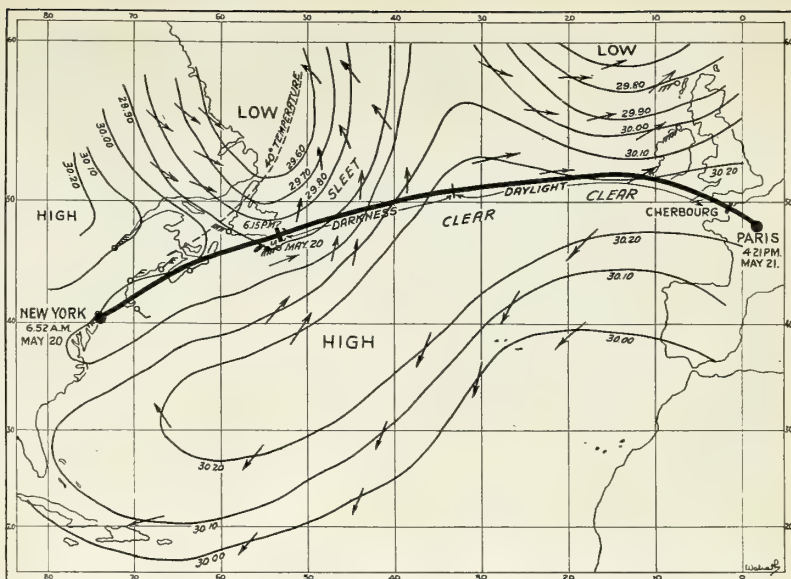
Their best chance of survival, considering the known courage and resourcefulness of Nungesser and Coli, the one on which the last faint hope was based, was that Nungesser made a safe landing in one of the many lakes which dot the interior of Labrador. Had this been true, weeks or even months might have passed before they would have been able to make their way to civilization. Little hope is now held out for their safety.

The lessons that this flight demonstrates are:

First, it is at present dangerous for trans-oceanic planes to fly near centers of depressions, particularly when such centers are accompanied by temperatures close to freezing; and second, the extreme importance of detailed weather information collated in a form designed to fit the peculiar needs of the airman; and third, the danger of low visibility conditions due to centers of atmospheric depression close to the point where a landfall is to be made, particularly when the landfall occurs during darkness.

Lindbergh's Flight

The most marked characteristic of the weather map of the North Atlantic, during the time Lindbergh was making his flight, was an elongated area of high pressure stretching almost completely across the ocean. This insured him generally clear weather with good visibility conditions. Its position with reference to the track of the flight was such that he encountered over the ocean only tail winds which increased considerably his speed over the surface.



Map showing the long high pressure area during Lindbergh's flight.

The two areas of depression, one near Labrador and the other near Great Britain, were unfavorable factors, but generally speaking the weather conditions were excellent and the winds most favorable. Only the one near Labrador affected his flight unfavorably. This unfavorable influence was manifested, first, by head winds from New York to Cape Breton Island and, second, by the area of sleet through which he passed shortly after leaving Newfoundland and while in the southeastern quadrant of the low pressure area.

The European depression, during his flight, moved southeasterly very accommodatingly and, instead of menacing him with bad weather, actually aided him by affording strong tail winds. One is almost tempted to say that the elements, angered by his audacity, at first conspired to defeat him and were then so impressed by his courage and skill that they decided to follow General Forrest's motto, "If you can't lick 'em, jine 'em."

From press accounts the public is familiar with the actual progress he made, but a study of the winds that affected his speed is of great interest. From New York to Cape Breton Island a head wind cut down his speed over the surface. At that point, it shifted approximately 180 degrees and increased his speed over the ground by approximately thirty-five statute miles per hour. No better illustration can be afforded of the necessity, in long-distance flying, of accepting a minor and local disadvantage to take advantage of a generally favorable condition, than this shift from a head to a tail wind. From Cape Breton his track was close to the northern edge of the large high pressure area and the winds were almost directly on his tail. As he approached Europe, the winds continued to assist his progress and intensified in force until, at times, the speed of his plane was increased by as much as forty miles an hour.

One of the greatest things demonstrated by Lindbergh's lone flight was the fact that

conditions aloft are sometimes unfavorable in isolated spots when the surface weather map indicates nothing but excellent conditions. This emphasizes the necessity to aviators of weather information concerning the upper air, particularly where the tracks of the flight approach the arctic regions.

Chamberlin's Flight

Almost as soon after Lindbergh's flight as was possible for meteorological conditions to reproduce the favorable conditions that obtained on May 21-22, they did so, and Clarence D. Chamberlin with a passenger took off. Not only was a high of great magnitude advantageously reaching across the entire North Atlantic, but its eastern and western limits overlapped considerably the land on each side. Two similar areas of depression, one near Labrador and one near Great Britain, were present but with this difference—the Labrador low was further to the north than during the previous flight and consequently further away from the track of the flight. In this position not only was the threat of low visibility and precipitation less imminent, but also the winds along the first third of the flight were more favorable in direction than they were for Lindbergh.

Chamberlin experienced the same shift from a head to a tail wind as his predecessor, but the shift occurred near Cape Sable instead of at Cape Breton Island. This meant that he bucked head winds two hours less which gave him two hours longer with favorable winds. Had both Chamberlin and Lindbergh been competing in identical planes with the same fuel capacity, this difference in wind conditions would have enabled Chamberlin to fly about 100 miles further than Lindbergh could have flown.

While passing through the southeastern quadrant of the Labrador low, Chamberlin encountered a little bad weather with some sleet but compared with Lindbergh's dose it was very mild, due to the fact that while Lindbergh flew as high as 10,000

feet, Chamberlin kept close to the surface. While the surface temperatures in Chamberlin's case were lower over this leg than those which Lindbergh experienced, Chamberlin by flying low escaped a lot of the sleet that so nearly caused Lindbergh to turn back.

All across the Atlantic conditions were ideal—weather clear and the winds highly favorable, though east of the thirty-fifth meridian they were not as strong as on the previous flight. This factor, and in addition the slower speed of the *Columbia*, accounts partially for Chamberlin's slower time over the ocean.

But while weather conditions were very favorable other factors hindered—the most important being, according to Chamberlin, compass trouble. This, and the fact that he was probably steering a course to the southward to the great circle track to his destination, caused him to sight and pass over the *Mauretania* in about Long. 13°30' W., Lat. 47° N. When he passed over the *Mauretania* he flew low enough to recognize that ship.

It is understood that at this time he was uncertain as to his exact position. He had a copy of a New York newspaper of the previous day, giving a chart which showed the approximate position of various ocean liners crossing the Atlantic. By means of this chart, he was able to correct his course by heading for the southwestern end of England.

This navigational procedure, while highly ingenious and for which he deserves great credit considering the circumstances, is not one to be recommended for general use. As he proceeded along his route during the night of June 5, passing over southern England and the coast of France, he reached the end of the good weather area and ran into a little less favorable condition than he experienced over the ocean, due to lower visibility and a little rain. During this period of darkness, he was hindered in recognizing points over which he was passing and was prevented from reaching Berlin. His landing at Eisleben, Germany, due to exhaustion of fuel, was made under these adverse circumstances.

Chamberlin's inability to reach his exact

destination, due to the lessening of cruising radius of his plane by the lack of adherence to the desired course over the ocean, emphasizes the necessity for navigation on flights of this description. In addition, his flight demonstrates that it is dangerous in aircraft to place entire dependence on one compass or one type of compass.

Byrd's Flight

The weather map of the North Atlantic Ocean during the time Byrd and his three companions were crossing is almost exactly like a reflection in a mirror of the map that obtained during Nungesser's attempt. Outside of the fact that the directions are reversed, a description of the weather for the one fits the other almost exactly. Of course, Byrd's landfall was made on a well-known inhabited shore, and Nungesser's on bleak Labrador (assumption); the temperatures experienced by Byrd milder than those which Nungesser probably encountered, and the depression through which Nungesser passed covered a greater area. But these differences, while they influenced strongly the survival of the one and the disappearance of the other, are, for the purposes of this discussion, minor ones.

The general characteristic of the weather map for both flights was an area of high atmospheric pressure, covering the first part of the flight, and an area of atmospheric depression near the two destinations. In each case the axis of the high runs approximately north and south, and not across the ocean as was the case in the flights of Lindbergh and Chamberlin, resulting in strong cross winds for both Nungesser and Byrd.

Both Byrd and Nungesser ran into areas of low visibility almost simultaneously with a shift in the wind force, and in Byrd's case, a change in direction in addition. In each case celestial navigation became impossible and dead reckoning of any accuracy equally so.

Consequently, in spite of the known navigational ability of Byrd, his plane deviated from the desired track. Commander Byrd's account of the difficulties he encountered give us some faint idea of what Nungesser and Coli experienced. For example, for the rain, fog and mist encountered by Byrd over France, substitute snow, sleet, fog,

freezing temperatures and the more rugged and desolate terrain of Labrador, and you have a true picture of the odds against the heroic Frenchmen.

However, Byrd passed through a center of atmospheric depression more intense than that encountered by any of the other aviators. This low, which was centered almost directly over Paris at the time of his arrival, was associated with heavy rain, very poor visibility and strong shifting winds. In fact, the *America* was the only transatlantic plane which passed through the very center of a storm and survived.

Conclusions

A discussion of the present feasibility of regular transatlantic flying is out of place in this article but certain sets of pertinent facts may be collected from these flight analyses. These are as follows:

1. The great importance of weather information;
2. The scarcity of good weather over the transatlantic flight routes;
3. The paucity of weather reports from ships;
4. The great value of aerial navigation on such flights;
5. The necessity for information concerning movement of the upper air;
6. The obvious value of radio; and
7. The effects of surface temperatures near freezing.

Volumes might be written discussing each of these points but only a brief dissertation of each is possible here.

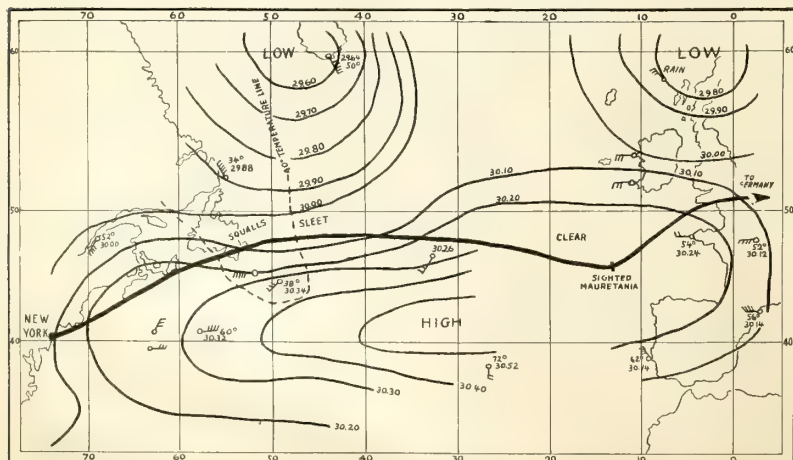
In the first place, considering the present state of development of aviation, the weather along the proposed route is of primary importance to long-distance aviators. Wind conditions vary so greatly over the North Atlantic that, with the extra fuel that can be carried on the planes of to-day, the margin of safety is so small that it can be easily wiped out by unfavorable winds. Storm centers cannot be entered with impunity nor are low visibility conditions overcome without great difficulty. On the whole, it is not too much to say that for the present, the weather and weather information on a transatlantic flight form the primary consideration.

While weather conditions over some oceanic routes are almost uniformly favorable, over the North Atlantic the aerial routes are not so favored. The five months, from May to October, are generally the most favorable, but this year, between May 1 and July 15, conditions have been favorable for an eastward flight across the Atlantic on only four occasions and for a westward flight but once. To demonstrate how advantage was taken of these days let us list them.

The most favorable day of all that was available for transatlantic flight was the day utilized by Chamberlin and Acosta to establish a new world record for sustained flight (over Long Island).

The next most favorable day, with regard to good weather and high visibility but second with respect to the help afforded by favorable winds, was June 4-5, when Chamberlin made his flight to Germany.

The day which ranked next, with respect



Ideal weather conditions which prevailed during Chamberlin's flight.

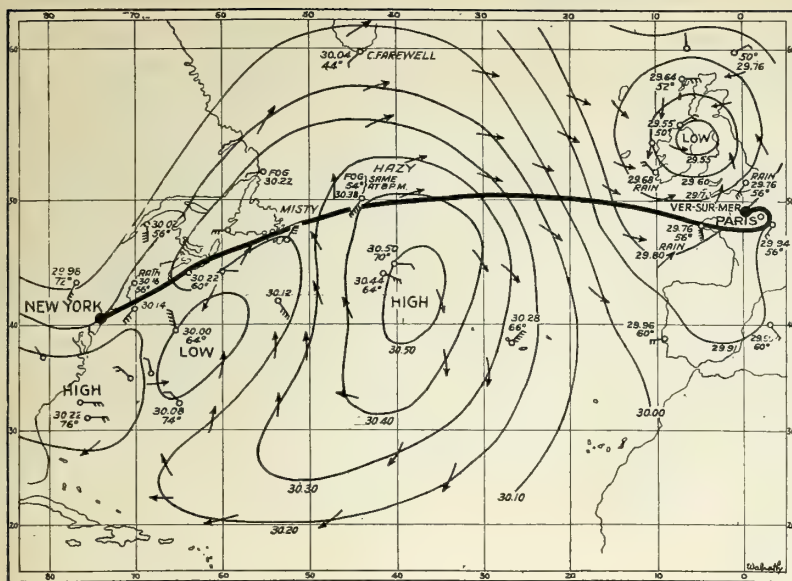


Chart showing the haze, fog, crosswinds and rain met by Byrd and his crew.

to absence of bad weather but which afforded greater help from tail winds, was May 21. It is hardly necessary to state that this was the date of Lindbergh's flight.

The least favorable day of all, both with respect to weather conditions and aid from wind direction and force on which a transatlantic flight might be considered even possible from the weatherman's standpoint, was June 30-July 1, when Byrd was in the air.

For a westward flight, while the day of Chamberlin's flight might have been utilized for the westward hop had a plane of 4,500 statute miles radius been available, only May 4-5, when Nungesser and Coli were undertaking their ill-fated attempt, could be considered at all favorable. In fact, while a storm center was located on the route, the weather conditions were more favorable, as a whole, for the westward flight than they had been for ten years. This is the opinion of no less an authority than Mr. Charles Mitchell, forecaster of the Weather Bureau in Washington.

So with only five days of favorable weather during a period of two and a half months, good flying weather over the North Atlantic is at a distinct premium.

In addition, all of the flyers labored under the difficulty of incomplete weather information. In spite of the publicity given the several flights and efforts made by various agencies, only a small percentage of the ships en route on the days in question gave weather information in time to be of value.

From a naval standpoint the two remaining points are the most important. The first is the value and necessity of aerial navigation. To the layman and to a large portion of the aviation world aerial navigation means dead reckoning. Even the few that know astronomical observations are possible believe that the flights of Lindbergh and Chamberlin demonstrate that such observations are not essential.

And the direct opposite of this belief is

the truth. For example, take Lindbergh's flight. He had no navigational equipment other than compasses and a chart showing the courses to be steered. The winds he encountered blew almost directly parallel to his courses. While on the first leg of his flight he encountered a small southeasterly drift, this was compensated for by a northerly drift he encountered over the ocean. Therefore the only factor tending to make him deviate from his track was his steering error. Colonel Lindbergh is a superb flyer, trained in the hard school of the air mail pilot. Consequently his steering error was practically nil and his landfall was only three miles from the desired point.

Chamberlin, without navigational equipment and while probably almost as expert a pilot as Lindbergh, was about 450 miles south of the great circle course to Berlin when he sighted the *Mauretania* and was able to check his position by consulting a newspaper chart giving the approximate position of the ocean liners the preceding day. This undoubtedly was due to the failure of his compasses to function to his satisfaction and to other factors.

Had Lindbergh encountered the cross winds that Byrd did, the *Spirit of St. Louis*

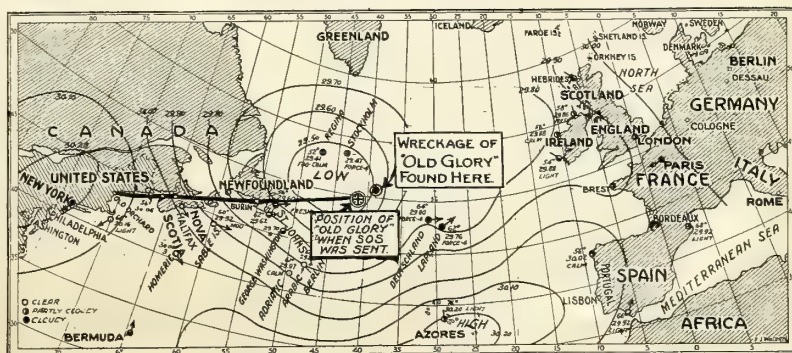
would have been blown off her course as far as was the *Columbia* in spite of the perfect piloting of the man controlling her destinies. And had Chamberlin encountered the poor visibility conditions that hindered Byrd and been unable to sight the *Mauretania*, it is almost certain that his courageous flight would have ended in disaster.

By no means the least of the many services that aviation owes to Charles Lindbergh was the warning he issued to the aviation world in general, and to the many flyers about to attempt a flight to Hawaii in particular, that transoceanic flights, and more particularly the Hawaiian flight, should not be attempted without a skilled navigator and complete navigational equipment, by which, of course, he meant astronomical observations.

As an important aid to aerial navigation, information concerning the movement of the upper air would be of great value. The observations of wind velocity and direction at various flying altitudes should be collected and published in the form of pilot charts, similar to the pilot charts showing surface wind conditions and other information now published by the Hydrographic Office. Unfortunately, the information essential to the compilation of such charts is almost totally lacking, and there is no prospect of such information becoming available for some years. In all probability international cooperation will be necessary for the successful undertaking of this project.

These factors, which cover only the navigation and weather features of transoceanic flying, indicate clearly that the problem is by no means solved; but the authors feel that within fifteen years, an aerial route across the North Atlantic will be regularly traveled. If the route is not a non-stop one along the great circle course, it probably will be from New England or Canada to the Azores and thence to Europe for the eastward flight, and from Europe to the Azores and thence to some point in the southern United States for the western flight.

In addition, the prediction is hazarded that the planes operating on these routes will be capable of arising from and alighting on the water. While the exigencies of war sometimes require a sacrifice of safety for a gain in performance, no such necessity exists in time of peace or for passenger-carrying planes.



Bertaud and Hill faced a low pressure area soon after leaving land.

AERO DIGEST

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AIR PASSENGER SERVICE REALLY IN SIGHT

THE Guggenheim Foundation for the Advancement of Aeronautics in America again has demonstrated that it proposes really to carry out, in a thoroughly practical and efficient manner, the work suggested by its title. This is indicated by the fact that it recently has decided to finance the Western Air Express, so that it may equip a model passenger airway between Los Angeles and San Francisco with the most modern aerial passenger-carrying equipment with which to carry on the splendid effort which already, without outside assistance, it has begun, and make of its resultant enterprise an American model airway competent to be an object lesson, helpful to all others having in mind similar enterprises.

It is not difficult to see just why the Guggenheims selected this special organization as that which should be helped financially at this particular time. Working with less capital than it has needed, and therefore unable to equip itself in the most desirable way, it already has flown a regular passenger service and paid out of its earnings a dividend of two per cent.

The dominating personnel of Western Air Express, Harris Hanshue and James Woolley, are precisely the right sort to operate an American Model Airway.

Early next year passenger flights will be established on a three-hour daylight schedule over a route approved for passenger transport by the Aeronautical Division of the Department of Commerce.

American railways never could have developed to effective efficiency without equipment loans. Now that a source for such loans, rightly managed and properly conservative, exists to help commercial aeronautics in the United States, rapid development of air transport may be regarded as a certain thing.

The value of the lessons which this model air service for passengers will be to the cause of commercial flying in all parts of the country and in all aspects cannot be overestimated. Doubtless this episode will be of paramount importance in the establishment here of commercial flying enterprises able to get on without Government subsidy—a form of assistance which many experts believe will be soon or late a great handicap to European air passenger carrying lines.

Again we doff our chapeau to the Guggenheims!

AN APOLOGY TO HON. F. TRUBEE DAVISON

PUBLICATIONS are supposed to have no soul. We are a publication, but we have a soul. Open confession is good for all souls. Hark ye—we hereby confess a grievous fault—confess, bow and apologize.

In the February issue of AERO DIGEST we stated that the Hon. Trubee Davison had declared the Reserve fliers had enough money for training. Everybody knows they haven't enough, or anywhere near enough, and many honest and admiring minds were startled by the news that Trubee Davison, who ought to know, should say so utterly mis-

taken a thing.

As a matter of fact he never said it. What he said was that the Army fliers had enough.

We are glad to make this correction. Few among those interested in American aviation deserve more credit than is due to Trubee Davison. When we made the statement which we made, and fired a shot at him, we of course believed the facts were as we stated. Finding that we were mistaken we are delighted. Trubee Davison should and we believe will be definitely a constructive force in America's aviation thought and achievement.

TRAIN YOUR CONGRESSMEN NOW

IN Paris the American Legion declared for a Department of National Defense. We have been declaring for that ever since the World War proved its necessity—it will eliminate waste and dual effort. We believe that during the next session of Congress a majority of the Committee on Military Affairs in the House will vote for it. It is essential that everybody interested in this subject so vital to the safety of America should begin now to convince his Congressman that votes depend on proper action in this matter. And get your friends to help you argue. Argue now, before Congress gets into session and the minds of members are diverted from real matters to the clamor of the selfish lobbyists and log-rollers.

UNCLE SAM LOOKS CHEAP

YES, brethren, this is the year during which Uncle Sam and America's air effort and genius were held up for the world to see in the guise of thirty cents. This nation, with a vast surplus and an income so great that we are considering reduction of taxation all along the line, did not have an entry in the Schneider Trophy Race, held recently at Venice, and greatest of all aeronautical contests.

There was something rather tragic in our absence from this race—the tragedy of darnfoolishness. Uncle Sam lost the trophy to Italy last year and this year England took it away from Mussolini's racing ace, who was forced out of the race by mechanical difficulties.

And we did not compete because we would not spend the money. Italy got the cup last year because our pilot had a plane manufactured in 1925.

In twelve months plane design and speed possibilities change materially—but Uncle Sam, poor thing, could not afford a new and up-to-date machine.

If last year and this year we had had a Department of National Defense, and in that Department a secretary for aeronautics, we would have had a winning plane in 1926 and for the races this year at Venice an entry befitting the United States.

What our Government felt too poor or was too stupid even to attend to very nearly was accomplished by a patriotic individual flier after he found out the incredibly stupid official state of mind. Al Williams, one of the Navy's best fliers, realizing the impossibility of naval representation in 1927, collected from private individuals capital sufficient for the building of a plane, and it must be said to the credit of the Bureau of Aeronautics that with or without the knowledge of the naval heads, every possible aid, by the grace of Admiral Moffett, was given to Williams by the Bureau's personnel. The task was hopeless. Not even night and day work could have completed Williams' job in time to get it to Venice for the contest.

What a comment on American intelligence as evidenced in our Naval Department! Not to support an effort vital to the development of that new science which must be our mainstay in the next war!

A NOD AND A WINK

JUST a thought for those brave spirits who are contemplating some already accomplished ocean flight: Columbus was the first man to cross the Atlantic from Europe to America. But who was the second man? The world has forgotten him.

Naturally. The world sits up and stares in amazement and admiration at the pioneer who essays some dangerous feat never before accomplished by man. It merely glances at the one who follows and imitates him. And at the long procession of followers the world merely yawns.

And why not? What new achievement has been demonstrated? What has been added to the world's store of accomplishment? Absolutely nothing!

THIS year's toll of transoceanic flying stands at twenty lost at sea and five killed in preparations for the flights in overloaded planes. Thirteen pilots, navigators, and passengers died in the Atlantic, seven in the Pacific, and five before starting.

Nine people in four planes crossed the Atlantic this year. Eight people crossed the Pacific from our coast to Hawaii.

That sums up the achievement and the cost in human life. Seventeen were successful. Twenty-five died.

If those figures prove anything, they prove that crossing oceans in landplanes—especially single-engined landplanes—is nothing but a stunt. A very courageous and even glorious stunt, of course. But still—a stunt.

However, Wright's first flight was a stunt; so was Bleriot's crossing of the English Channel; so was the first trip of Stephenson's old locomotive, The Rocket; so was the voyage of Columbus. Stunts, every one of them, and so regarded at the time. But no one will question the fact that these stunts led to something.

So will these ocean stunts lead to something, but not immediately, and certainly not by the continued flying of landplanes across and into oceans. As a pioneer effort, yes. As a continuous vaudeville performance, no. Blondin crossed Niagara Falls on a tight-rope; but most of us prefer to stick to the Suspension Bridge.

SHOULD ocean flights be prohibited by law? Certainly not. We have enough prohibition now, and too many prohibitionists. Let aviation work out its own destiny, just as all humanity is working out its destiny.

Some form of control by the Department of Commerce, sensibly and sanely administered by Wm. P. MacCracken, Jr. and his staff of capable assistants, would be of benefit, at least to the extent of preventing inefficient pilots and semi-navigators from committing suicide in hopeless equipment. But prohibition—? No.

Let those fly who will. The courage they display is an inspiration to the mass of humanity, who are by nature timid and fearful, greatly in need of inspiration.

I would say anything I could to discourage a friend from making what I considered a foolish and useless flight. I would do nothing, and I would pass no law, to prevent him making that flight if he wanted to make it. He might achieve some result that I could not foresee.

At Flying Lions, Messrs. Wilbur and Levine, Aimee McPherson, Haunting of the Navy by Count Zeppelin's Ghost, and other Peculiar Manifestations of these Changing Times

By

by Caldwell

THERE have been three sane and worth-while flights across the Atlantic and part of the Pacific which led me to believe that transoceanic airlines would some day be a reality. They are the flights of Commander Rodgers, Commander de Pinedo, and Commander Read and Lieutenant Hinton in large flying boats. That was equipment suited not only to ocean flying but also to ocean alighting, which at this stage of aeronautical progress still may be a necessity. And when that necessity arises—as it did arise on two of those occasions—the crews have an excellent chance of surviving, as they proved.

The comparative safety of those flights made a deep impression upon

me. And that impression has not been added to or lessened by any flight made since in landplanes. I see no connection in any sensible mind between landplanes and oceans, or flying boats and the Rocky Mountains. A boat belongs in the water; an automobile on the road. An air vehicle belongs not only in the air, but also on the earth or the water on which it eventually will have to alight. It should be suited to the elements on which it has to alight, whether they are solid or liquid. And it seems to me that these fundamentals have been lost sight of for the moment.

After all, what are we seeking now to prove with these ocean flights? Are we trying to prove that an airline can be developed, capable of transporting people and goods across the ocean in safety? If so, we have proved conclusively that at this stage of development they cannot be transported safely, and that we must await further developments in the engineering laboratories. Or are we seeking to prove that flying across oceans in unsuitable equipment is a daring stunt, having no value except as a purveyor of sensation? If so, we have proved it; we need not spend any more lives and money piling up additional proof.

AMID the encircling gloom caused by the failure of several ocean flights, there comes gliding stealthily into the Press one Curtis D. Wilbur, Secretary of the Navy, who, according to the Associated Press, speaketh as follows, in mellifluous tones, the while shaking his head pensively:

"Look at what has actually happened in the last few weeks," quoth he somberly. "No one has recently made the crossing from Europe or England to this side. And the planes that made the attempt were not carrying bombs. They were stripped down to the last ounce and carried every drop of gasoline possible. It might be possible for a three-engine plane to cross and drop a few small bombs on some city, but such a raid would be ineffective from a strategic viewpoint."

Of course it would be ineffective. Who in the world thinks it would be anything else? And who, outside of Mr. Wilbur and possibly a few absolutely fanatic aviation enthusiasts, even imagines that any nation at the present day would despatch from Europe or from the Orient squadrons of airplanes loaded with bombs with which to attack this country. Such an eventuality is impossible to-day, and probably will be impossible for many years to come.

But what is not impossible is that one, two or even three nations, thoroughly enraged at the wealth of this country and the poverty of some of the others, may combine their fleets and despatch them across the ocean, carrying hundreds and even thousands of fighting and bombing planes which they will release by catapult when they are near these shores. And when they have dropped their loads they may return to airplane carriers—or even if they do not return they will have accomplished their work of destruction on such centers of population as New York, Philadelphia, Washington, Pittsburgh, or Boston. Probably they'll spare Washington. If I were an enemy I'd let Washington stand as is and consider it an unconscious ally so long as Mr. Wilbur didn't desert the place.

Again, it isn't impossible that some powerful nation should enter Mexico or Canada and work from there. I'm not an alarmist; I'm not stating that it is a probability. But who will deny that it is a possibility? Off-hand, I cannot think of any nation that would not be welcome in Mexico right now, for example, if they landed with the glad cry that they were going to swat Uncle Sam. These are painful thoughts—but they are not unthinkable.

You six readers of this column may have noted that never once have I advocated the scrapping of the Navy. I believe in the Navy. It is a necessary part of National Defense, and will be needed for many years to come in its present form. And it will be needed for very many more years in a changed form—which I think will be, eventually, under the sea and over the sea, but not on the sea.

But what I do not believe in is the control of aviation by men who proclaim in published press despatches that they know little or nothing of the use of aircraft in war—which is precisely what Mr. Curtis D. Wilbur has proclaimed, as quoted above.

But I find it hard to believe that even a Secretary of the Navy knows so little of how airplanes would be used by an enemy that he would envisage bombers coming all the way from Europe here, when they would naturally and inevitably come most of the way by boat. What I suspect is that Curtis has slyly seized upon these ocean stunt flights merely as a prop on which to hang some of that well-known and somewhat cheesy navy propaganda.

Think what we could have said when all those destroyers ran on the rocks near San Diego.

A SIR GALAHAD of the Air, ever ready to spring to the aid of beauty in distress, has been discovered. His reincarnated spirit has been lurking unsuspected, all these years, within the manly bosom of no less a personage than Mr. Casey Jones, the well-known metal prop salesman of Garden City.

The gallant Casey, answering the wild, despairing shriek of unwaved Cleveland beauties, leaped aloft on his trusty aerial steed, and, booted and spurred—though I don't know by whom—dashed frantically to Ohio carrying a new machine for plastering permanent waves on the heads of the wilted fair ones.

As the machine was also to be exhibited before a convention of beauty specialists, the flight might seem to smack somewhat of publicity. But perish the thought! He went "at beauty's call, sweet consolation to impart, with eye enraptured, madly beating heart—" as the poet hath it. What ho, Sir Casey! Greetings!

SPEAKING of publicity, the well and favorably known busy bee, we were informed in childhood, "improved each shining hour." But the ubiquitous press agent improves even the hours that don't shine. He sits up all

night, with a fat cigar and a bottle of gin, thinking up new stunts to catch the public eye.

The latest and niftiest idea to flash upon a startled world is that of transporting a full-grown roaring African lion in a non-stop flight from Los Angeles to New York. Now, that's just like something they'd think of out in Los Angeles, isn't it? You couldn't imagine anything like that getting itself thought out in a place like Boston, where the fog numbs the intellect. It takes climate to produce an idea like that—and movie people to put it into execution. Certainly, it's a movie stunt.

But the idea is so brilliantly idiotic, so diverting in this sad old world of all too much sanity, that the sponsors of the idea deserve mention. They are the Metro-Goldwyn-Mayer Co. and the B. F. Mahoney Aircraft Corporation. My delighted thanks to them for thinking up things to amuse me—and you. Even if amusement was not their sole object—for of course it wasn't. Included is the coldly sane business proposition of displaying on the pages of all the newspapers in the country a picture of that old lion, which is the trade-mark of the Goldwyn films. Not so bad, eh? And there's a hint there for ingenious pilots who can think of good publicity ideas connected with airplanes for various big businesses.

But notice how cleverly the idea is put across to the kind of minds who read sensational newspapers and visit the movies regularly.

"Aviation has reached a point," says Mr. Mayer in a published interview, and without cracking a smile, "a point where about the only pioneering left to be done is wholly within its commercial aspects. The transportation of animals by airplane is an entirely new venture in commercial aviation, and our success in this venture will materially broaden the scope of this field."

I should say so! If the lion enjoys the flight, Ringling Brothers, not to be outdone, probably will send their own menagerie for joy rides, just for the pure thrill of the thing. The elephants will take off in Ford three-motored transports, while Grover Loening's amphibian should be able to stagger into the air with the guinea-pigs, and Grover's spats, if it has a long enough run. Keeping the elephants quiet will be merely a minor problem for the pilot, which will enable him to devote the major part of his time dissuading the snakes from doing slack-wire acts on the control cables.

Al. G. Barnes, old-time circus man who owns the lion, kept his face straight while he recited to the press: "One of the greatest problems of the circus is that of transportation. It is not unreasonable to believe that the day is not very far distant when an entire circus can make its present twelve-hour jump in an hour or two."

Of course it's not unreasonable! As a big circus requires only 100 of the largest-sized railroad cars to transport it, and as it only weighs about 6,000 tons, a few Barling Bombers—say about 2,500 or so—could move it with ease. The thing is simplicity itself. So, fortunately, is the reading public. Ergo, the stunt will go across with a bang if it's handled right.

As a guide to aviation people selling publicity stunts, this one should be considered as a Bible to be reverently studied, and it is so recommended. Note the clever linking up with pioneering commercial effort—which will get across with the majority of readers as just that. They even had a picture of the lion and an artist's conception of how the flying lion will look in the plane. He looks to be about to crash, as a matter of fact, for he is in an open cage arrangement in the fuselage, about ten feet behind the

(Continued on page 410)

RADIO · IS · BETTER · WITH · DRY · BATTERY · POWER

Recommended Everywhere by Heroes of the Air

BURGESS BATTERIES are popular with those engaged in flying. For in this one field, above all else, their record is unique.

Commander Byrd used them in his recent flight across the Atlantic and, earlier, in his North Pole expedition. So did Art Goebel in his adventuresome trip to Hawaii. And so on, the list continues through the triumphs of the 'round-the-world flyers, of MacMillan, Wilkins and others.

Accept the judgment of hundreds of other careful flyers and buy sturdy Burgess Batteries. You will recognize them by their stripes—remember them by their superior service!

Ask Any Radio Engineer

BURGESS BATTERY COMPANY

General Sales Office: CHICAGO

Canadian Factories and Offices:
Niagara Falls and Winnipeg



Art Goebel in recent San Francisco-Honolulu flight



Commander Byrd in New York-Paris flight; also over North Pole



The American 'round-the-world flyers



Captain MacMillan in Arctic



BURGESS BATTERIES

Say you saw it in AERO DIGEST

center of gravity. But that's all right, as gravity plays no part in this flight. The animal's mouth is open, in a roaring position. I don't blame him. If I was in that position, I'd roar too.

As a further note of interest, the press agent affirmed that they had difficulty in finding a pilot—"Wanted—an aviator," and all that. Of course, anybody would fly with the lion in a cage. He'd better be careful not to crash his passenger, though. Most passengers get peeved at a crash—and I sure would hate to have a peeved lion on my hands, and the cage all bust open.

I've got just the pilot for this lion—Charles Levine. Now, there's just the flying-partner for Levine—that lion. It would be kind of tough on the lion, but perhaps he's a real good fighting lion.

SPEAKING of Levine, it's a good thing he didn't fly back alone. He'd probably have made a slow trip of it, because he'd have stopped several times to fight with himself out in the middle of the Atlantic.

After the success of Lindbergh's "We" it wouldn't be surprising to have Charlie write "Us," the Biography of the Battling Bellanca. It would be chock full of question marks. And no answers.

He had a tough time over in France. When he got there, along in early Summer, he said, "Lafayette, we're here!" And a month later he said, "Lafayette, we're still here!" And a month or so ago he exclaimed, "Lafayette I'm damned if we ain't still with you!"

The Parisians had sort of soured on Charlie by that time—not that he noticed it. He isn't very noticing that way. But everybody over here noticed it and wondered if they couldn't snake him out of that, or chloroform him, or something.

And then I'm hanged if he didn't solve the problem by taking his departure—also the Bellanca! Well, I don't deny I kid him; but I take off my hat to him for that stunt. I always doff my hat to Charles Levine for his amazing courage. And if he'd started across the Atlantic alone I'd have bet on his getting here—he has the luck of thirteen niggers carrying rabbits' feet and luck charms. The ethics of that get-away may be a trifle wobbly, but the courage was there. His first solo flight—and he went to London! Talk about Lindbergh—! Wait until Levine has had that much experience. He'll fly around the world backward. Without a compass. Yes, and even without so much as a ham sandwich aboard.

Well, Charlie took off on his first solo and went up in the air about a thousand feet—which was less than half the altitude that Drouhin attained when he heard that Levine and the Bellanca were done gone—*parti!* as they say on the boulevards. Also *toot sweet!* if I still have a feeble grip on my French. We can leave Drouhin there, gnashing his teeth and swearing in hissing French while we follow the course of our hero, Charles the Worst, of the Levine dynasty.

The flight over Paris was wobbly but interesting. Charlie could look down and see all the American tourists running around, shopping and getting divorces and one thing or another; and sitting before the boulevard cafés talking to other refugees from the uplift movement in America.

Once he lost sound of the various American accents in Paris he just kept on flying until he ran across a lot more American accents coming up—so he knew he must be over London. They were especially loud above one spot—the Savoy Bar, the ancestral mansion of Elliott White Springs. Then he heard a kind of slopping sound which could only come from a bunch of mid-West school

teachers who had come over on a Cook's Tour to eat ice-cream in Selfridge's. So that's how Charlie knew he was over London.

The Englishmen meanwhile were preparing a reception for their visitor at Croyden. They had an ambulance and a fire-engine and correspondents from all the papers. They looked like a Democratic Convention, only they weren't quite so mixed up and sort of hopeless looking. They were waiting to collect whatever happened to be left of Charlie and the Bellanca.

Well, as soon as Charlie saw the newspaper men milling around down there he felt right at home and was anxious as anything to get down and hand them an earful. So he came down at only about ninety miles an hour, while the Bellanca shuddered in every bone in its fuselage—and I guess Charlie shuddered in every bone of his fuselage, too. He nearly hit a hangar, which didn't jar him, as he's used to hitting things, from stray Americans in Paris to the wrong note in speeches.

The airdrome officials sent up an Avro to show Charlie how to land. But with Charlie cavorting around there wasn't any room up there for more than one plane. That Avro took one look, and landed. It scudded out of the way like a rabbit, dashed into a hangar, and closed the doors after itself.

Then the Bellanca simply took things into its own hands, and landed Charlie. He went right across the field and ran into two Customs regulations and all the aerodrome rules. "I think I need a shave," he says to the astounded officials. "You've just had one," they murmured—"a close shave."

The Englishmen were tickled to death with Charlie because he'd put one over on the Frenchmen. You know, those English haven't forgotten the time they had with Napoleon, the Mussolini of 1812, so whenever anyone does a Frenchman in the eye it isn't the custom for Englishmen to go around crying on each other's shoulders. They have a hard time keeping a straight face. So they liked Charlie and would have given him the key of the city, only Mayor Walker had just collected it. By the way, they gave Walker a key to Edinburgh, Scotland. It was a Yale lock key with "Please return" on it.

Charlie's coming back, I hear, to start an ocean airline. Large planes with all the comforts of home, including a roped enclosure such as Tex Rickard displays his workers in, so Charlie can ride and fight with himself all the way across.

How lucky it was for the whale that swallowed Jonah instead of Levine!

OUT in Ponca City, Oklahoma, they had a Terrapin Derby on Labor Day. Close to 4,000 of these small land turtles took part in the races. The procedure of a good turtle race is to put the racers in a small wire enclosure in the center of a circle. The wire barrier is lifted, and away rush the infuriated turtles, at a good fast clip of well over a mile a day. The first one to reach the outer circle, 75 feet away, wins the prize—an earthworm seasoned with Gulden's Mustard, Worcester Sauce, or what have you?

This turtle race was got up by a patriot in the vain hope that it would induce a sporting spirit in the Navy. The patriot figured that if once they got all excited over the turtle race, they'd maybe go in for seaplane racing on a small scale and send something over to grab that Schneider Cup. So an important admiral was invited to attend the race and give his sport complex an airing.

Well, it was a good plan, but it didn't work. The day

(Continued on page 486)



NATURALINE THE SUPER AVIATION FUEL

A fuel of concentrated volatility . . . instantly responsive . . . quick starting . . . built for high compression aviation motors of modern design.

Exhaustive laboratory and flight tests on practically every type of motor have demonstrated that modern motors require more than ordinary gasoline can give in power, smooth, even firing and high anti-knock qualities.

"Naturaline" is not a blended fuel. It is made from natural gas. It is concentrated volatility. And modern science has shown the way to control the finished product by stabilization giving a finished product that every flyer who uses it is enthusiastic over.

"Naturaline" tests are rapidly nearing completion. We will soon be ready for distribution through contract agencies. Far seeing fuel distributors should write for data on this new aviation fuel. This data is being compiled and will soon be ready for mailing.

Pilots visiting the McIntyre Airport, Tulsa, may have their ships fuelled with "Naturaline."



CHESTNUT & SMITH

C O R P O R A T I O N

Tulsa, Oklahoma

Everything an AIRPLANE can offer*...

Is combined in the Fairchild "All Purpose" Monoplane. Built in as fine a way as a seven-year organization knows how to build, and sold at a price only possible because of two-a-week volume, the Fairchild Monoplane is without question the outstanding value in the fine plane field.

HERE is a plane that really flies itself to such an extent that Curtiss Flying Service pilots do not hesitate to get out of the pilot's seat for long periods. Here is a plane that has ample, and at the same time, light control even beyond the *stalling angle, partly the result of small scientifically designed tapered ailerons combined with a high aspect ratio rudder.

These unusual flying qualities were not achieved by chance, but by a year's wind tunnel and flight testing and the determination of the Fairchild engineering staff to build the *finest* plane in the world.

Here is safety assured by a complete stress analysis, the *physical testing of all major parts and a *real* inspection system. Safety is one result of the thoroughness of Fairchild Engineering. Here is workmanship and finish found only in production airplanes, workmanship obtained only by a large organization which can *specialize in each operation.

Innumerable advanced and tested refinements make the "All Purpose" Monoplane the last word in fine planes; refinements which add to the performance, range of use, and ease of maintenance.

The more important refinements are: Wings, which can be easily *folded in two minutes by two men; three wide doors for easy entrance; exceptionally large safety glass windows; comfortable seats which quickly fold out of the way for freight carrying or

photography; adjustable pilot's seat; *servo brakes in dural disc wheels; an improved type of oleo and spring landing gear; and *vision which is more nearly 100% than that found in any other plane. From spinner to tail skid there is ample evidence of the determination of an experienced engineering staff to build the best.

The organization back of the product is an important consideration in any purchase. Its reputation and stability is your only guarantee of the quality of the many parts of the plane which you cannot see or inspect, and of the service you will receive, not only today but years from now.

The Fairchild Airplane Manufacturing Corporation is a subsidiary of the FAIRCHILD AVIATION CORPORATION, one of the eight largest organizations in the aviation industry. As such, it is well managed, amply financed and progressive. For seven years Fairchild has been building quality aviation products, building and servicing them so well that the name Fairchild is favorably known whenever aviation products are discussed.

Fairchild Airplane Manufacturing Corporation, Farmingdale, L. I., New York. See the Department of Commerce's Fairchild Monoplane on the Lindbergh Tour, or at a local Fairchild agent, or fly into our factory—but in any event write for a complete catalog of this plane.

FAIRCHILD



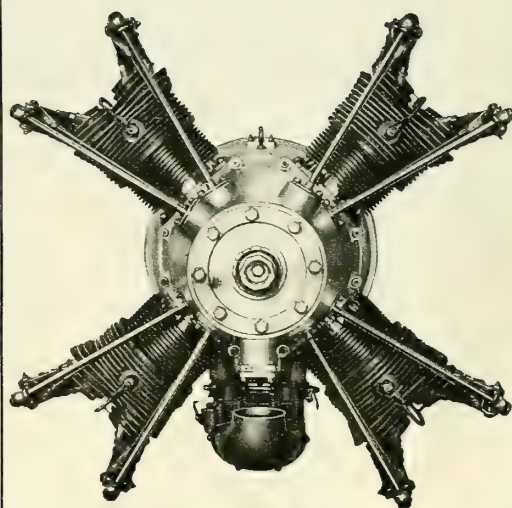


THIS MARK *

Half the parts...

SIMPLICITY and reliability go together in aircraft engines. The Fairchild Caminez Engine is simple almost beyond belief. It has less than half the number of parts of other engines . . . has no timing gears or counter-weights . . . no bearings depending on lubrication pressures . . . and yet has the highly efficient half speed propeller without the use of reduction gears. Ralph Lockwood, of the U. S. Department of Commerce, pilots of the Curtiss Flying Service, Army and Navy pilots, pilots of the Air Mail, Mr. Brukner, manufacturer of Waco planes, in fact everyone, who flew and inspected the Fairchild Caminez Engine, was amazed at its simplicity. This simplicity, combined with Fairchild Caminez refinement in design and manufacturing methods, will go a long way toward establishing new records for reliability and ease of maintenance. *The manufacturer of your present plane can supply you with a Fairchild Caminez motor installation.*

The Fairchild Caminez Engine Corp. is a subsidiary of the FAIRCHILD AVIATION CORP. Its products, like all Fairchild Aviation products, are thoroughly engineered and tested, efficiently manufactured and are backed with a service that



135 B.H.P. 1000 R.P.M. 340 LBS.

has made Fairchild Aviation one of the eight largest organizations in the aviation industry.

Fairchild Caminez Engines were flown in April, 1926, and since then have been thru a strenuous series of flight tests and endurance runs, so there could be no question of their reliability. In July, 1927, a Model 447 B Fairchild Caminez Engine passed its 50-hour test, running the last 27 hours non-stop. As a result of the test it was approved as airworthy by the U. S. Department of Commerce, the first engine to be approved. Production engines are now being delivered. Fairchild Caminez Engine Corporation, Factory and Sales Offices, Farmingdale, L. I., N. Y.

FAIRCHILD CAMINEZ

PRICE **2480** F. O. B.

* This trade mark represents the determination of a 7-year-old organization to build the best in aviation!
THE FAIRCHILD AVIATION CORPORATION

Say you saw it in AERO DIGEST

"THE DRIFT INDICATOR"

By William A. Rogers

Recognizing the fact that there are always head winds, tail winds, cross winds, bumps and sometimes squalls in the path of the business of aviation the object of the Drift Indicator is to spot landmarks that seem important and determine, if possible, the true course pursued by the business of American aviation. Suggestions and criticisms are always welcome.

ANOTHER fine airport was opened with appropriate ceremonies at Elmira, New York, on September 10th and 11th, under the direction and supervision of William E. Arthur Company of New York, designers and builders of airports and flying fields. Prominent citizens of Elmira formed an airport corporation for the purpose of providing their city with flying facilities. A fine level field, two miles from town, was purchased. It has two long runways and is equipped with a large hangar.

The committees which started the airport movement have been well rewarded for their efforts by the size of the crowd of spectators that turned out both days to watch the air meet.

One of the first pilots to arrive was Lieutenant "Jimmy" Doolittle in an Army P1. He flew in from Mitchel Field. "Jimmy" put the P1 through everything but his famous outside loop. During the course of the afternoon 18 Eaglerocks and Wacos taxied up to the line heading for the races and for passenger carrying. It was an interesting fact that holders of tickets for rides were obliged to wait an hour and a half for their turn and many of them had to come back the next day to be taken up. It was estimated by officials that more than half the population of the town was at the flying field on Sunday.

Secretary of the Navy for Aviation, Edward P. Warner, flew in on Sunday afternoon enroute from Detroit to Washington in a Vought Corsair. About the same time Lieutenant Bissell from Mitchel Field put down in an Army Bomber.

A party of New Yorkers arrived in a private car chartered by William E. Arthur Company to attend the opening ceremonies. The guests included: C. H. Webster of the Curtiss Export Company, Mr. and Mrs. C. A. Hand, H. A. McKean of the William E. Arthur Company and Mrs. McKean, O. C. Kidney, Harry A. Kidd, George J. Cousin,

R. L. Gardner of the William E. Arthur Company and William A. Rogers of Aero Digest.

The inauguration of the field at Elmira is an example of what is taking place in hundreds of cities throughout the United States. The nation-wide movement of building airports in progressive cities and towns is fundamentally one of the biggest things now being done for aeronautical development in America.

THE work of the Henning Parachute Company in designing and manufacturing a parachute for the Royal Typewriter Company is worthy of special mention. George C. Henning was asked to make a parachute for landing packages of 60 pounds from a height of 200 feet, packages not to land harder than if dropped unsupported from a 3-foot height. The success of the tour of the Royal Typewriter Company plane in delivering typewriters by parachute is now well known.

THE Second Annual Seaplane Convention was held at the New Haven Air Terminal on September 17th and 18th. To our knowledge this is the only seaplane flying meet held in the United States. The meet was an unqualified success. The Tweed brothers, Jack and Charlie, who operate the New Haven Air Terminal, have demonstrated clearly that there is a very big demand for seaplane flying in the east. One of

the loudest complaints heard is the scarcity of seaplanes and flying boats.

The races and other events were planned with the greatest of care. The contestants were visible to spectators at all times during the race. Between events speedboat races were held, some of which provided as many thrills as the seaplanes. Some of the motor boats were no bigger than the top of a kitchen table and skipped along at 20 miles an hour and better.

The first planes to arrive were two Vought seaplanes from the Naval Reserve Air Station at Rockaway Beach, L. I. Lieutenant Jack Iseman and Captain C. L. Peck were first to land, followed immediately by Lieutenant William A. Rogers and Ensign Harry Emerson. The other service planes to arrive were Major E. H. Brainard of the U. S. Marine Corps in a Pratt and Whitney-powered Loening amphibian. Lieutenant V. M. Guymon, U. S. M. C., also flew an amphibian. Captain Ira Eaker of Goodwill Tour fame flew in with Secretary of War for Aviation Trubee Davison in Captain Eaker's Goodwill Tour amphibian.

Captain Harry Rogers and his well known fleet of Curtiss Seagulls provided the crowds with many thrills in the closely contested Seagull races. The writer has never seen tighter formations rounding the pylons at any air race. The Seagulls varied but slightly in speed and, as the races were from a dead start, they were bunched closely together on the turns.

A banquet was held in New Haven, Saturday night, at which Secretary Davison delivered a stirring speech urging the city of New Haven to add an airport to their excellent seaplane station.

The following is the summary of events at the convention:

In the "On to New Haven" contest for the commercial planes, there was a tie for first place between Norman W. Bartelsen of Winthrop, Mass., and H. W. Wickes of Winthrop, Mass., both in Hispano-motored M. F. boats. The first prize of \$100 and the second prize of \$50 were divided equally between them. There was no contestant eligible for third prize.

In the "On to New Haven" for planes of the U. S. Service a cup was awarded to Lieutenant J. W. Iseman of the Naval Air Station, Rockaway Beach, L. I., in a Vought UO for being the first service plane to arrive for the meet.

Lieutenant V. M. Guymon, U. S. M. C., of Brown Field, Quantico, Va., in a Loening amphibian, received a cup for the service plane coming the greatest distance.

U. S. Service planes race, 10 miles, 200 h. p.—First, Lieutenant Jack Iseman, Vought UO; second, Lieutenant William A. Rogers, Vought UO; time, 5:15.

Race over 10-mile course for flying boats up to 160 h.p.—First, Captain Harry Rogers, Seagull plane; second, H. L. Wells, Seagull; third, Peter Talbot, Seagull; time, 6:25.

Outboard motorboat race, Class "C," 3 (Continued on page 416)



Breakfast 7000 feet up in one of the tri-motored Ford-Stout planes.

(Left to right) Arthur Q. Hagerman, Wade Werner, Gladys McConnell, hostess of the party, Dan Thomas, Dorothy Darnell, and William K. Gibbs



*That's why
More Pilots fly them!*

THE remarkable performance of the Fairchild Monoplane, either as a landplane or seaplane, is the result of sound aeronautical engineering, excellent construction, and the Wright "Whirlwind" Engine.

Embodying the modern features of insulated, heated and ventilated cabins, these luxurious planes combine complete comfort for

the passenger and pilot with all the "dash", speed, climb and safety that aeronautical skill has yet evolved.

The record of Wright "Whirlwind" Engine durability, reliability and safety in private flying is just as outstanding as those made in several recent overseas flights, and in over 4,635,000 miles of military and commercial flying during 1926.

Send for Bulletin No. 17V

WRIGHT AERONAUTICAL CORPORATION, Paterson, N. J., U. S. A.

WRIGHT
Whirlwind
A SUPERLATIVE AERONAUTICAL
engine


Say you saw it in AERO DIGEST

miles, 8 h. p.—First, Sx-2, by W. F. Harrison, Bristol; Baby Buzz, by Dr. E. R. Bogle, Bristol; third, Nosey, by Charles Johnson, Short Beach; time, 7:18.

Speedboat race, 3 miles, 100 h. p.—First, Dream, by J. A. Johnson, Branford; second, Miss Jeannette, by Earle F. Bradley, Branford; third, Baby Bunting, by Oliver Gildersleeve; Conn.; time, 7:06.

Mooring race, one-mile flight to starting buoy, free for all seaplanes—First, Captain Harry Rogers; second, Peter Talbot; third, Henry Wicks; fourth, Harold Macmickle; fifth, H. L. Wells.

Free for all commercial seaplanes—First, Pilot Wicks, Curtiss Seagull, 8 cylinder, 150 h. p. motor; second, Pilot Wells, Curtiss Seagull, 6 cylinder, 160 h. p.; third, Captain Rogers, same make of plane. The best time was 5 minutes, 30 seconds.

Cruisers under 40 feet—First, H. M. Anderson, New Haven, "Whistler," 4 cylinder, 18 h. p.; second, Jacob Johnson, New Haven, "Helen," 2 cylinder 12 h. p.; third, Charles Shutter, West Haven, "Rosebud," 6 cylinder, 90 h. p.

Service seaplane race—First, Major E. H. Brainard, U. S. M. C., Loening amphibian, 500 h. p. motor; second, Lieutenant Guymon, Loening amphibian, 480 h. p.; third, Lieutenant Jack Iseman, Vought, Wright Whirlwind 220 h. p. motor; fourth, Lieutenant William A. Rogers, Vought, Wright Whirlwind 220 h. p. motor. The winner's time was 5 minutes.

Outboard motor rowboat race—First, H. France, 16 minutes, 10 seconds; second, New Haven Air Terminal; third, H. Anderson.

HARRIS M. HANSHUE, president and general manager of Western Air Express, Inc., announces that a 2 per cent dividend to stockholders will be distributed by this company on October 1st.

This is believed to be the first instance in aeronautical history where an air transport company engaged solely in commercial operation of airplanes and dependent upon earned revenue for its entire income, has paid its stockholders a return from surplus upon their investment.

KREIDER-REISNER Aircraft Company, Inc., Hagerstown, Maryland, has engaged as chief engineer and production manager, F. E. Seiler, jr., formerly project engineer of structures and supervisor of the analytical section of the Naval Aircraft factory, Philadelphia.

CLOYD P. CLEVINGER'S book, "Modern Flight," a manual of practical flying, is proving to be a great help to many instructors. It covers every phase of flight in clear condensed paragraphs and has a great many helpful hints on airplane motors written by Joseph Leonard, chief mechanic of the Alexander airport. Rigging is covered by Archie C. Taylor, who is chief rigger of the Alexander airport. Cloyd P. Clevenger is chief pilot and flying instructor for the Alexander Aircraft Company in Denver.

THE first, second and third prizes in the air races held in Spokane, Washington, for the Mitchell Trophy were won by planes equipped with the Splitdorf magneto. The Splitdorf Company has long been recognized

as an outstanding manufacturer of magnetos, and this triumph is in line with its many other successes in the building of electrical equipment.

FRED L. FOSTER of the Chestnut and Smith Corporation, manufacturers of Naturaline aviation fuel, has been at New York flying fields for the past month gathering data and telling pilots a great many important things about fuel. Mr. Foster makes most of his business trips by air. He reports that the business men of Tulsa *must* use airplanes in order to keep up with the keen competition between oil companies in that part of the country, and shipping of machinery by air is an everyday occurrence.

THE American Neon Light and Sign Corporation has recently been formed to supply Neon beacons for airway purposes. The company is headed by Mr. Otto B. Shulhof, formerly the Commissioner of the Port of New York Authority. Other members of the corporation are: Former Ambassador James W. Gerard; Charles W. Culkin, Sheriff of New York County; A. E. Lefcourt, president of the A. E. Lefcourt Realty Holdings; William E. McGuirk, president of the 34th Street Vehicular Ferry; David Nickelsberg, president of the Fur Merchants Warehouse Corporation.

This company is manufacturing under the well known Le Brun patents. Mr. Le Brun has taken up his residence in the United States to devote all of his time to the development of his lights in connection with this company.

»TITANINE«

Registered Trade Mark

TI-TWO DOPE

IS NOW AVAILABLE
IN GLOSSY OR
LACQUER
FINISH



⌈ The New Sikorsky Type S-37
Is Finished With TiTwo Dope ⌋

Leading manufacturers of commercial aircraft use TITANINE dope, pigmented dopes, varnishes and enamels on production planes because of its proven protection and beautiful appearance-features which promote sales.

TITANINE, INC.
UNION, UNION COUNTY, NEW JERSEY
Contractors to the United States Government

ART GOEBEL WON WITH PHILLIPS *Gasoline*

WESTERN UNION TELEGRAM

CLASS OF SERVICE	SYMBOL
TELEGRAM	BLUE
DAY LETTER	NITE
NIGHT MESSAGE	N L
NIGHT LETTER	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Other words characters indicated by the symbol appearing after the check.

NEWCOMB CARLTON, PRESIDENT GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

1927 AUG 15

"Via RCA"

Received at 505KGIA

HONOLULU 36 RCA

CLT BILLY PARKER ★ PALACE HOTEL

6100 SAN FRANCISCO

PHILLIPS NEW AVIATION GASOLINE CERTAINLY PROVED ITSELF IN THE SAN FRANCISCO HONOLULU AIR RACE I HIGHLY RECOMMEND IT FOR WRIGHT ENGINE FLYING TIME TWENTYSIX HOURS GAS CONSUMPTION 317 GALLONS

ART GOEBEL 350

The time as shown in the data line on full-rate telegrams and day letters, and the time of receipt at destination as shown on all messages, is STANDARD TIME.

The above wireless message to Billy Parker, test pilot for the Phillips Petroleum Company, tells its own story

THE high quality and absolute dependability of the PHILLIPS Aviation Gasoline used by Art Goebel in his victorious flight in the "Woolaróc" from San Francisco to Honolulu is characteristic of all Phillips natural gasoline products.

PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA

PHILLIPS

Aviation Gasoline

Say you saw it in AERO DIGEST

CHEMISTRY AND AIRCRAFT

“WHAT has a chemist got to do with airplanes?”

Without a doubt that is the question I have been most frequently asked to answer in the four years I have been associated with airplane work.

Few people realize the extent to which science and primarily, of course, engineering science, enters into the construction of a plane. The modern airplane factory organization probably shows a greater ratio of engineers to workmen than any other industry at the present time. Nearly every type of engineer is represented in the engineering department, but this article will be confined to the chemist or chemical engineer and his work as exemplified by the Materials Testing Department of the Curtiss Aeroplane and Motor Company, Inc.

Everything purchased as raw material for aircraft work is, naturally, the finished product of some other industry. As such, it has already felt the influence of the chemist. Steel of all grades and descriptions, especially alloy steel, is bought under strict specifications. Paints, dopes, fabrics and allied products have all been produced under carefully controlled processes.

All these materials are purchased under very rigid specifications and upon their receipt at the factory are very carefully tested both physically and chemically to see if they meet these requirements. Steels of all grades are used—plain carbon, chrome-vanadium, nickel, chrome molybdenum, etc. These are all given a complete chemical analysis before being placed in stock. In conjunction with this check-up, tension, bending and crushing tests are also applied as a check. This physical testing also comes under the Materials Testing Department. Complete tests are applied to every few hundred feet or pounds of material to make sure the lot or shipment is uniform.

Then the paints, varnishes, lacquers, dopes and shellac must be inspected unless procured from some approved concern whose products have previously been checked and approved. In connection with these materials are the others used by the Wing or Panel Department: cloth, which is usually Grade A cotton, thread, cord, veneer, plywood, glue and nails, which may be tin, zinc, cement or lacquer coated, or some combination of these protective coverings.

In general, everything is bought under the strictest specifications and must be inspected before being admitted to stock for use in airplane construction.

This constitutes in brief the routine work of the Chemi-

By George W. Corrie



cal Department. A more interesting phase is the plant control work. The dip brazing must be periodically checked to see that the copper content is maintained. The humidity thermometers in the wood kiln must be standardized at intervals. In connection with this thought I might mention that the pyrometers in the Heat Treat Department are checked periodically by the

Service Department of the Pyrometer Company. Then the Radiator Department may complain that the silver or lead solder they are using is not as good as the last batch and this must be investigated and adjusted if necessary.

In the Propeller Department, the caustic soda solution and the nitric acid have to be tested and kept up to strength. These solutions are used to etch duralumin propellers after which they are inspected to insure freedom from cracks. Then there may be a propeller blank that seems harder to work than the others and the heat treatment will have to be checked and possibly a check analysis made of the material. These propellers are made of dural, which is an aluminum-copper-magnesium alloy. The presence of copper permits of the heat treatment of the material. This material, which is but slightly heavier than aluminum, can by proper heat treating be given the strength of mild steel.

Then we have a very extensive Electroplating Department. Here copper, zinc, nickel and cadmium plating are carried on. In connection with this work are the allied processes—sand-blasting, silicating of aluminum, and aluminum alloys, and linseed oil treatment to prevent corrosion inside of steel tubes. All these solutions and processes require frequent and careful supervision to insure the utmost efficiency in their use.

The line of demarcation between plant control and research, the most interesting branch of a chemist's work, is not always clearly defined in our industry. In the boiler house, for instance, an analysis of the boiler water was requested together with a formula for a boiler compound that could be used. Another time a check-up on fuel oils was desired. In one case the operatives in the wind tunnel complained of a drowsiness hard to overcome and an analysis of the air was made with recommendations for a change in the ventilation system.

In the electroplating of materials the field for research is tremendous and unlimited in its possibilities. Zinc plating and cadmium plating of all (Continued on page 478)



Electric combustion furnace. Experimental nickel-plating set up in foreground. Experimental electroplating set up.



Suffering from growing pains

THE great big, young industry, Aviation, has grown so fast that today its greatest need is organized marketing and planned promotion. This applies not only to the industry as a whole but to individual manufacturers and operators.

We realize the difficulty of laying down plans in a field where developments change from day to day but we know from experience that much can be anticipated, vision can be used and plans can be built that are fundamentally sound yet sufficiently elastic to meet changing conditions.

We know the Aviation business — have worked in it for years. We know the people and the markets. We are not only air-minded but air-trained.

Our success in other fields — textiles, drugs, automobiles, construction — is of immeasurable value in our Aviation work. We have some very definite ideas and plans that will be of interest to anyone in Aviation and to the industry as a whole.

If you will signify your willingness to meet us, we would like to discuss your problems with you without obligation. You name the time and place.

Reimers & Osborn, Inc.

ADVERTISING

285 MADISON AVENUE, NEW YORK

Say you saw it in AERO DIGEST

TECHNICAL

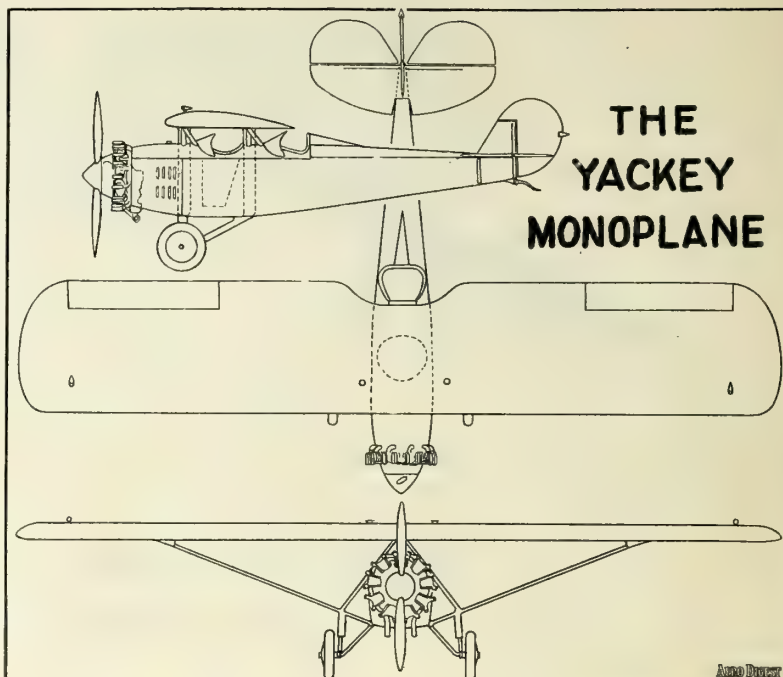
YACKEY MONOPLANE

TWO of the new Yackey monoplanes were flown to New York during the middle of September for participation in the New York to Spokane air race. During their stay at Curtiss Field much favorable comment was heard from those who examined these planes—the clean lines, neat workmanship, attractive finish and the rugged, simple type landing gear all claimed attention. It was learned that a great number of the mechanics employed by Yackey were taken over from the U. S. Air Mail Service when the Maywood repair depot was abandoned and more than half the men working in the Yackey shops have been engaged on aircraft work continuously for the past ten years.

The Yackey monoplane wing uses the Clark Y wing curve which is recognized as possessing unusually stable characteristics throughout its normal range of angles—a good all around curve for high-speed monoplanes. Wing structure is of spruce and veneer. Box beams are used in the wing construction with veneer from the entering edge to the beam, above and below. The ailerons are actuated by tubing control rods.

Both pilot and passenger compartments are upholstered in leather. A large baggage compartment is provided at the rear of the pilot seat and two smaller lockers in each of the cockpits. A deep door permits easy access to the front cockpit. A specially built exhaust system reduces the noise from the engine and carries the gasses below the body. The Ahrens control is used for the engine throttle to eliminate bell cranks, levers and pulleys. The regular stock model monoplane may easily be converted for the Pratt and Whitney 425 h. p. engine merely by changing the motor mount.

Special attention has been given to the landing gear. All working parts have bronze bushings; bolts are hollow and provided with alemite connections. Sauzedde wheel brakes are incorporated in the wheels. The spring tail skid is steerable and the ship is easily controlled on the ground as well as in the air. The entire ship is finished with Berryloid. A Standard Steel propeller is



used. The manufacturers guarantee the performances of the ship to be within 5 per cent of their specifications as follows:

Specifications

Wing span	41 feet 2 inches
Wing chord	7 feet 1 inch
Length over all	26 feet 2 inches
Height	8 feet 4 inches
Motor, Wright Whirlwind	225 h. p.
Wing section	Clark Y
Incidence	0
Wing area	284 square feet
Weight empty	1460 pounds
Pay load	1000 pounds
Landing speed	40 miles per hour
High speed	140 miles per hour
Cruising speed at 1600 r.p.m.	115 m.p.h.
Gas capacity	84 gallons
Oil capacity	8 gallons

Some of the recent purchasers of the Yackey monoplanes are: Robert M. Hoffman of Chicago, E. K. Campbell, Moline, Ill., Standard Oil Company of Indiana, R. K. Peck, Elgin, Ill., and L. M. Pedigo of Cedar Rapids. The buildings at the Checkerboard Field have been changed and additional buildings are now being erected.

Six months were required in building the first plane and at the present time planes are being built at the rate of one every three weeks. The schedule of production by the first of the year will be one plane a week. The Yackey Aircraft Company operates its own flying school and air field in connection with its factories at Desplaines River and Roosevelt Road, Forest Park, Ill. Mr. W. A. Yackey, jr., is manager and chief pilot of the company.



One of the Yackey monoplanes which participated in the New York to Spokane air derby last month.

CONSOLIDATED

INSTRUMENT COMPANY OF AMERICA, INC.

Announces

A COMPLETE NEW LINE of AIRCRAFT INSTRUMENTS

DESIGNED ESPECIALLY FOR MODERN COMMERCIAL AIRCRAFT

STAR PATHFINDER COMPASS



The Star Pathfinder Compass represents the latest development in aircraft compasses. It embodies many advanced features including a built-in compensating unit eliminating the use of troublesome loose magnets, also a spherical magnifying cover lens permitting the use of a small dial and yet affording great visibility.

The Star Pathfinder is the most compact, accurate and practical compass yet constructed.

TAG ALTIMETER



The Tag Altimeter has been designed along the lines suggested in the official reports of the U. S. Bureau of Standards and the National Advisory Committee for Aeronautics. One of the most valuable features is the actuating cam which is cut in a vacuum and its contour individually shaped to fit each separate diaphragm. Thus, any imperfections or differences in diaphragms are compensated for and precision results obtained.

Another feature is the "Barometer Setting" scale which allows a pilot to compensate for differences in barometric pressures. The Altimeter may also be used as a barometer when desired.

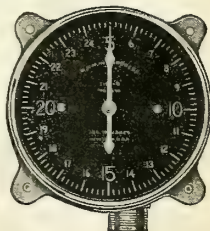
AIR SPEED INDICATOR

This instrument conforms with the latest requirements of both the U. S. Navy and Army Air Corps. The case is a special aluminum die casting and exceptionally light and the actuating mechanism is made of non-corrosive material throughout. A moisture absorbing device is placed within the case affording a double insurance against corrosion. Furnished complete with new type Pitot Static tube.



JONES TACHOMETER

The Jones Tachometer is so well known throughout the industry that it is hardly necessary to mention any details. It includes a perfectly uniform scale covering the entire dial which affords greater length and openness than in other instruments on the market. All connections are S. A. E. standard, and the instrument can be calibrated to operate at either cam shaft or crank shaft speed.

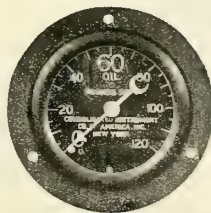


MAGNETIC GASOLINE GAUGE



This instrument is designed to operate in an inverted position from wing tanks or in an upright position from fuselage tanks. The dial is the drum type, having large easily read figures, which is protected by a black enamel cap with a non-breakable window.

OIL PRESSURE GAUGE



The Type D Gauge is especially suited to aircraft purposes due to its exceptionally rugged construction. The case is finished in black and is moisture and dust proof. The instrument is non-corrosive, and guaranteed for accuracy, workmanship and material.

Consolidated Instrument Company of America, Inc.

NEW YORK

CONTRACTORS TO THE U. S. ARMY, NAVY AND COAST GUARD



THE TWIN-MOTORED SIKORSKY MODEL S-37

PROGRESS in American all-metal construction is visible in the Sikorsky twin motored biplane which underwent its flying tests last month. Although built primarily for long distance commercial flying, much interest is being shown in this type in military circles because of its unusual features of quick convertibility for bomb carrying. Fitted with two Pratt and Whitney engines, the S-37 becomes an all American product and as standardization of the metal parts has been worked out, quantity production would become an easy matter in a national emergency.

The wing structure is made entirely of duralumin covered with fabric. Spars are built of "I" beams and ribs, and structural work is made of channels. The whole framework is assembled with duralumin rivets and nickel steel bolts and braced by high steel tie rods. No welding is used.

The fuselage, of very rigid construction, is made of duralumin angles assembled on fittings. It is fabric covered. No welding is used in any part of the structure.

Ailerons, of modern mitered type, are efficient and sensitive under all conditions of flight.

The empennage is made of duralumin, fabric covered. The stabilizer is adjustable in the air and therefore the passengers can move about in the cabin without any inconvenience to the piloting.

Patented compensating rudder control provides perfect stability and easy handling in case one of the motors stops.

Fabric is used to cover the entire plane. The covering is smooth and elastic and under weather changes will not create stresses nor affect the structure, the latter being always subject to normal definite loads only.

The landing gear, of the divided axle type, consists of two separate units, made entirely of steel. The tread is 17 feet. Oleo shock absorber with a 7 inch stroke and a rubber disc shock absorber with 5 inches play represents

an efficient and satisfactory combination for landing and taxiing. The large wheels are fitted with roller bearings and mechanical brakes operated from the pilot's seat by means of a hand lever and pedal.

Exterior bracing is composed of streamline wires while the interior bracing consists of steel tie rods.

The tail skid is provided with an oleo shock absorbing cylinder and rubber discs.



The spoon of the skid is made of heavy duralumin equipped with an easily interchangeable shoe made of special steel.

Visibility is unobstructed both fore and aft from the pilot's cockpit. The pilots are in no way cramped for the cockpit is very roomy. On account of its position it is not draughty or subject to disturbing air currents. The pilot's cockpit is equipped with a sliding cover which, when pulled up, transforms the pilot's cockpit into a comfortable closed cabin. The pilot's seat is adjustable to the desired height and pedals are adjustable even while in the air.

As a passenger transport the plane has a roomy comfortable cabin 4.5 x 6 x 16 feet

seating comfortably 14 to 16 persons. The cabin is provided with windows all along its length and is fitted with comfortable wicker arm chairs. The cabin is well ventilated and can be easily heated when flying in cold weather. Balsam Wool insulation is used in the cabin walls, floor and ceiling as an effective protection from cold and to reduce the engine noise.

The entire control system is of simple reliable type. Special attention is drawn to the mitered type of ailerons and the connections thereto, also to the stabilizer adjustable to a nicety from the pilot's seat. Good stability and control is assured at all stages of flight, including stalling. The self compensating rudders provide easy maneuverability and control for a ship of this size, flying on either one of two motors.

Among the special features of reliability and safety are the following:

It has the ability to climb and maintain a high altitude with full load with either motor stopped without impairment of safe and easy control.

Involuntary tail spins and nose dives are entirely eliminated by carefully studied and thoroughly tested special wing and tail surfaces, and the proper combination thereof.

Easy take-off and landing. The plane is remarkable for its quick get-away and for its fast take-up after landing.

The position and arrangement of the pilot's cockpit insure the comfort which makes for long flights and safety.

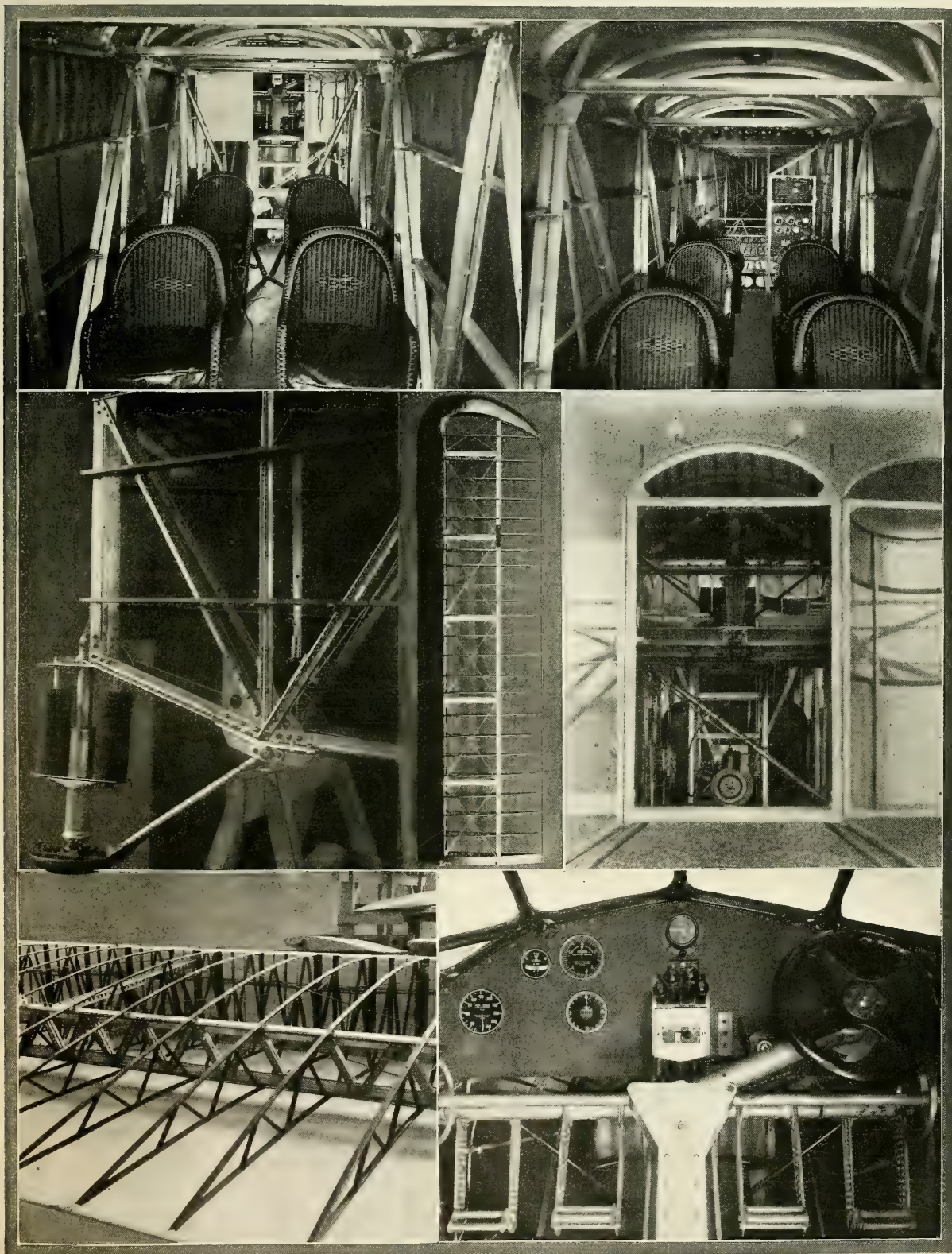
The plane has a very high load factor under all flying conditions.

The rigid all-metal construction with elimination of vibration insures safety and besides lending to the comfort of the passengers, adds to the long life of the plane. The open dural sections used in the construction of wings and fuselage are a valuable feature from the standpoint of maintenance and inspection.

Crew, passengers, control cables, tanks,



The Sikorsky Model S-37 as it was being tested recently at Mitchel Field, Garden City.



CONSTRUCTION DETAILS OF THE SIKORSKY MODEL S-37

At the top are shown the passengers' seats in the cabin, and the channel framework, looking fore and aft. Center—the tail skid; one of the lower wing panels and a view through the front of the fuselage. Bottom:—All metal beam and rib construction; a view of the pilot's controls and instrument board.

etc., are located entirely out of the plane of propeller rotation.

The S-37 has a gliding angle of one to eleven.

Specifications

Span of upper wing 100 feet
Total length 45 feet 6 inches
Height 16 feet 3 inches
Area of plane 1,075 square feet
Weight empty 8,000 pounds
Normal useful load 7,000 pounds
Gross weight 15,000 pounds
Power plant, two motors 500 h.p. each
Load per square foot 14 pounds
Load per h.p. 15 pounds
Load factors:

High incidence 4.5
Low incidence 3
Inverted flight 2.5
Landing condition 5
Tail surface 35 pounds per square foot
Stress analysis was made in accordance with the U. S. Air Service requirements. The unit stresses for heat treated duralumin were made as 55,000 pounds per square inch.

Performances

(With normal useful load of 7,000 pounds)

Distribution of load for passenger and express service:

Gas and oil for 7 hrs. (840 mi.) at
cruising speed 2,590 pounds
Crew of two 350 pounds
Sixteen passengers 2,720 pounds
Baggage, express and mail 1,340 pounds
Pay load 4,060 pounds
Total useful load 7,000 pounds
Maximum speed 140 miles per hour

Cruising speed 120 miles per hour
Stalling speed 57 miles per hour
The cruising speed is considered as requiring not more than 75% of the engine power.
Ceiling 17,000 feet
Climb at ground 700 feet per minute

THE UNIV. OF DETROIT AERON'L ENG. COURSE

THE University of Detroit was one of the pioneers in establishing a regular undergraduate course of studies in Aeronautical Engineering, leading to the degree of Bachelor of Aeronautical Engineering (B.Ae.E.). The course had its inaugural early in 1921, with regular classes scheduled and conducted in September of the same year.

The engineering training offered students registered in the course of Aeronautics follows the general University of Detroit plan of co-operative education. Under this plan the student spends alternative bi-weekly periods in the class and industrial shops which are allied with his course of studies. The aeronautical students are at present employed by the Aircraft Division, Ford Motor Co.; Stinson Aircraft Corp.; Hess Aircraft Co., and others.

The enrollment for the course has steadily increased from 20 students in 1921 to 95 students in September, 1926.

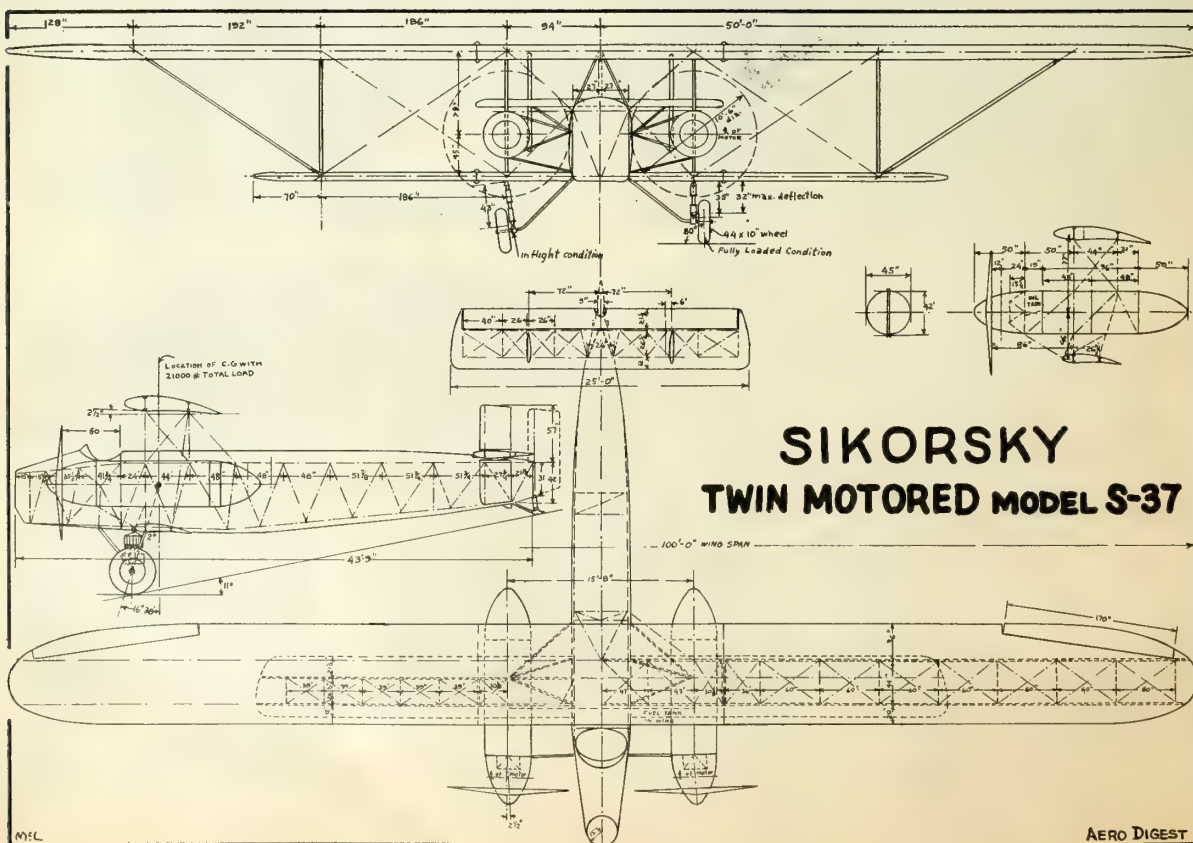
In addition to the available laboratory equipment in the other departments of the College of Engineering, the Department of Aeronautics maintains an aerodynamic labor-

atory. This consist chiefly of a closed throat open circuit wind-tunnel, 3½ ft. square at the working chamber. This size represents the largest tunnel which could be built in available space in the present Engineering Building.

The laboratories of the University of Detroit are open for use to the industry in general and in particular to the aircraft establishments at a non-profit basis. These facilities have been used by the Aircraft Development Corp.; Stinson Aircraft Corp.; Buhl Verville Aircraft Corp. and many others.

The Powell Racer, winner of the AERO DIGEST prize and all light plane events in the International Airplane Races at New York in 1925, was designed and built at the University of Detroit. In addition various researches are carried on in the University Laboratories. Due to the close proximity of the University to the aircraft industry in and about Detroit, it has become customary to include among its activities regular scheduled inspection trips to such establishments as: McCook Field, Dayton, Ohio; Advance Aircraft Co., Troy, Ohio; Hartzell Propeller Co., Piqua, Ohio; Selfridge Field, Mt. Clemens, Mich.; Stinson Aircraft Corp., Northville, Mich.; Ford Aircraft Division, Dearborn, Mich.; Aircraft Development Corp., Detroit, Mich.

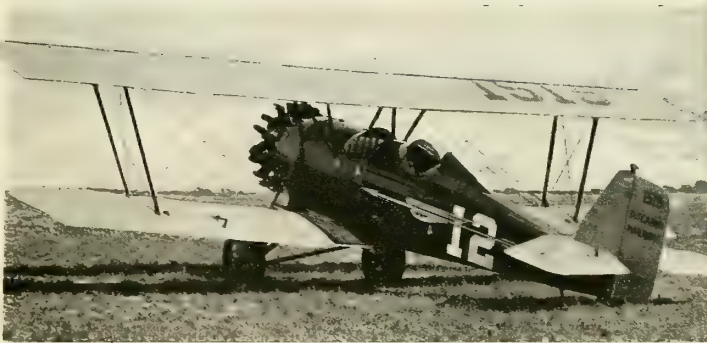
In addition, to arouse and maintain the interest of the students in matters pertaining to aircraft, the student body maintain the U. of D. Aeronautical Society.



**SIKORSKY
TWIN MOTORED MODEL S-37**

THE IDEAL PLANE
for
AIR LINE WORK

The Pitcairn Mailwing



THE PITCAIRN MAILWING (Wright Whirlwind)

A Mail and Express Carrying Airplane of Characteristic Pitcairn Construction Combining to an Exceptional Degree the Essential Qualities of:—

HIGH PERFORMANCE

(Top Speed — 136 m.p.h. Min. Speed — 45 m.p.h.)

MANEUVERABILITY

EASE OF MAINTENANCE

LOW COST OF OPERATION

Price — \$10,000 at the factory

*Including full complement of Instruments
and Complete night flying equipment.*

Full details upon request.

PITCAIRN AIRCRAFT INC
LAND TITLE BUILDING PHILADELPHIA

THE BACH CS-4 PLANE

CONSIDERABLE interest has been aroused among members of the flying fraternity of Southern California by the appearance of the new four-place completely enclosed Bach CS-4 cabin biplane.

The cabin embodies the distinctive Bach type fuselage in construction and design. Complete protection and comfort for pilot and passengers has been attained through the use of plywood overall covering and deep comfortable interior upholstery. The comfort of a modern closed motor car has been incorporated in the ship. Excellent visibility and an exceptionally wide reserve of power are among its distinctive features.

This ship was delivered recently to Stanley Short of Short's Airport, Los Angeles. The craft will be used as a passenger transport for long trips. Powered with a 150 h.p. Hisso motor, it has a speed range of 30 to 130 m.p.h.

THE NEW THUNDERBIRD SERIES

ONE of the latest contributions to advancement of aircraft design is the first or a new series of the Thunderbird, designed by Theodore A. Woolsey. Although no speed tests have been made as yet the new ship has created considerable interest among aviation enthusiasts of Southern California. Its ability to step away from its older brothers, both in speed and in climbing, give indication that it will set a new record for Thunderbird performance.

The illustration shows one of the planes equipped with the new Bailey C7R radial 120 h. p. engine fitted to the Thunderbird detachable nose mount. This engine has unusually clean lines that stream into the lines of the plane. A perfect Immelmann turn from the horizontal is one of the Bailey Thunderbird's regular performances.

The new series Thunderbird will maintain the same sturdy construction that has enabled it to hold up so well in service, featuring principally improvements that will increase its performance. The features are: Deep, comfortable, cushioned seats; large windshields to insure comfort to pilot and passengers; pilot head, cushioned and streamline; adjustable stabilizer; door for passenger cockpit; excellent visibility; split-type landing gear; steerable tail skid; double aileron; detachable nose-mount; radiator tank conforming with wing curve; N-type wing struts; aluminum gas tank, 43 gallons; all fittings specially plated to prevent rust; easily detachable motor cowling; concealed



The Bach cabin biplane powered with a 150 h.p. Hispano engine.

control cables; bell crank control system to ailerons; Warren truss construction ribs; laminated I beams; optional color scheme.

Specifications with OX5

Span, upper	33 feet
Span, lower	31 feet
Length	24.5 feet
Height	9 feet
Chord	5 feet
Gap	5 feet
Wing area.....	300 square feet

Weights

Weight empty	1300 pounds
Useful load	800 pounds
Pay load	340 pounds
Full load	2100 pounds

Performance With OX5

High speed	100 miles per hour plus
Landing speed	32 miles per hour
Ceiling	15,000 feet
Rate of climb, first minute	800 feet
Cruising radius	400 miles

BUTLER CONDUIT PIPE

PIPE that can be used as conduit, double well casing or in other ways, in diameters of 16 inches to 6 feet, is being made by the Butler Manufacturing Company of Kansas City, Mo., and Minneapolis, Minn.

The pipe is made of blue annealed copper steel or tank plates and can be secured in any quantity desired. Mammoth machinery has been installed to handle and automatically and electrically weld this pipe. On this account production is placed on a large scale, resulting in speed and economy.

The pipe comes in any length or gage required. However, it is regularly made in 10-foot lengths or multiples thereof. The ends of the pipe are plain to be welded together.

The first 16-inch diameter pipe that was made by the company was tested and withstood a pressure of 1,100 pounds. Of course, this pipe is not recommended for such working pressure.

AIRPLANE MOTOR FUEL

RAPID progress in the development of high compression airplane motors is limited, to some extent at least, by the type of motor fuels available.

Present day motors cannot operate at full efficiency on ordinary commercial motor gasoline and even the present types of aviation grade gasoline do not possess all of the fuel characteristics necessary to successful efficient operation of motors of advanced engineering design.

Higher compression ratios are demanded for greater power output per pound of engine weight. But on present types of gasolines these ratios are limited by the tendency of "un-doped" fuels to detonate above the normal 5 to 1 ratio.

Gasoline manufacturers have offered fuels of a higher gravity and lower end-point as a solution of the problem but even these high test fuels are inclined to knock severely in the newer types of motors.

The ideal aviation fuel would be one with high gravity, low end-point and of high anti-knock qualities, providing such a fuel was so stabilized as to prevent vaporizing excessively in the gas lines and at the carburetor.

Gasolines refined from crude oils are blended with natural gasoline (a gasoline made from natural gas) in order to increase volatility, build up gravity and to lower the end-point. While this blending process decreases, to some extent, the tendency of such a fuel to detonate, yet it seems to be only a compromise and not productive of the highest type of aviation fuel.

Much interest is being shown by airplane motor manufacturers in the program of research, which has been under way the past two years, by the manufacturers of natural gasoline. This work has been thorough and has advanced to a point near final tests.

Results so far obtained have been unusually interesting. It has been demonstrated that this fuel, made exclusively from natural gas, possesses unusually high anti-knock qualities and, because of its exceptional volatility and an absence of excessive vaporization, it makes an aviation fuel of high efficiency in motors having a high compression ratio.

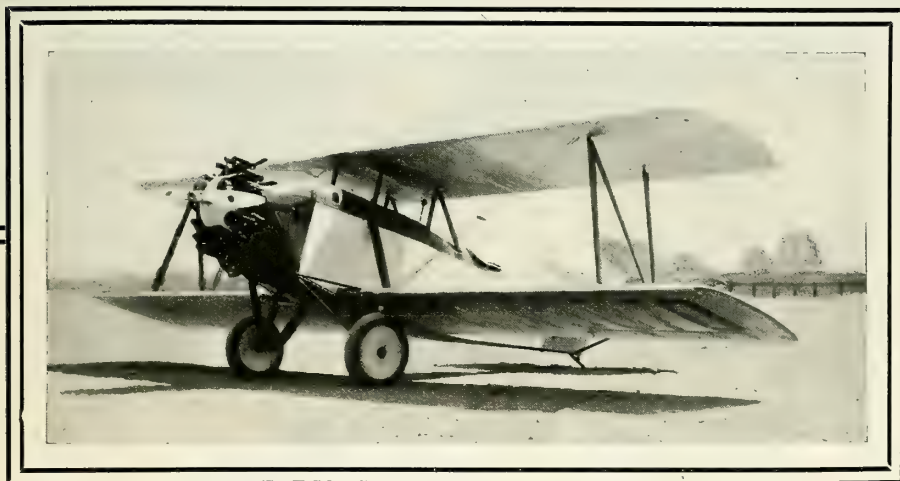
When interviewed recently in New York, D. E. Buchanan, vice president of the Chestnut and Smith Corporation, said: "The work we are doing in an attempt to provide a more efficient airplane motor fuel is being done as our contribution to the advancement of aviation."



Thunderbirds equipped with Curtiss OX5 and the 120 h.p. air-cooled Bailey engines.

WATCH THE AIR-KING

(WITH WRIGHT WHIRLWIND J5)



HERE is the big brother to the popular Air-King 27. Made identical to the Air-King entered in the Dole race as "City of Peoria."

This ship proved a big favorite on the Pacific Coast. Its quick take off (14 seconds with $\frac{1}{2}$ load) its climbing speed and its fast top racing speed was the sensation of the Oakland Air Port.

Wing area 342 square feet, no stagger, N.A. C.A. M12 wing section gives this ship speed, lift and stability never before equalled in its class.



National Airways System

Field 8, LOMAX, ILLINOIS

CENTRAL STATES 75 h. p. "MONOCOUCPE"

THE Monocoupe manufactured by the Central States Aero Company of Davenport, Iowa, is a semi-cantilever, high wing, monoplane. The two seats are side by side with the pilot's seat slightly ahead of the passenger.

The high speed is 102 miles per hour over a carefully clocked course; stalling speed, 48 miles per hour; cruising speed, 80 miles per hour. Twenty gallons of gasoline give it a range of 400 miles or 20 miles to the gallon.

Design load factors are 6.5 for high incidence, 4.5 for low incidence, 2.5 for inverted flight and 2 for nose dive condition.

The tail post is $2\frac{1}{2}$ chord lengths from the center of gravity.

The wing is of Clark "Y" section made in one unit with a span of 30 feet and a chord of 5 feet. Tips are elliptical. The trailing edge is $\frac{1}{8}$ inch piano wire. Spars are of selected airplane spruce, routed to 1 beam section, spliced in the center by a vertical cut having a slope of one in twelve. The front spar has a depth-width ratio of 5 to 9, the rear spar of 4 to 1. The single drag brace is of conventional type, number 10 piano wire being used throughout. Compression ribs have the contour of the regular rib but have a solid $\frac{1}{8}$ inch basswood web with rectangular compression members glued and nailed on each side and centering at the drag brace fittings. The solid webs stiffen the spars against twisting.

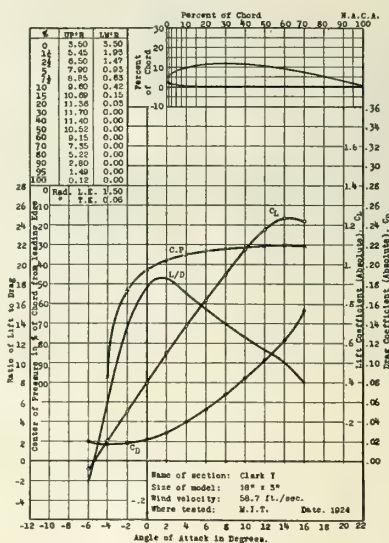
Ribs are constructed of $\frac{1}{8}$ inch basswood webs with spruce capstrips. Large rectangular lightening holes are cut in the webs but the chord members are of sufficient depth and strength to give the rib a 20 per cent margin of safety over the required load factor with a spacing of 12 inches. Each rib weighs $9\frac{1}{2}$ ounces.

Wings are externally braced by tubular chrome molybdenum steel struts attached at slightly more than a chord length from the wing tips. The front strut is $1\frac{1}{2}$ inch X .065; rear $1\frac{1}{4}$ inch X .049. The margin of safety of the front strut is 14 per cent and of the rear strut, 12 per cent over the required load factor. Both front and rear struts come together at the fuselage. The cross member of the fuselage at this point consists of a 1 inch X .049 steel tube $32\frac{1}{2}$ inches long having a margin of safety of 3.58 per cent under the maximum compressive load and 4.46 per cent under the maximum tensile load induced by the struts.

The brace strut lower fitting is attached to transverse tube of the fuselage by a long strap weld to insure full use of the strut strength. A central vertical fin prevents the fitting from bending under a compressive load. The fittings attaching the struts to the spars are fastened by two $\frac{3}{8}$ and two $\frac{1}{2}$ inch nickel steel bolts. No eccentric loads are induced by the struts.

All fittings have ample margins of safety. Struts are attached to the fittings by $\frac{3}{8}$ inch nickel steel bolts.

Attachment of the wing to the fuselage



Ordinates and characteristics of the Clark Y wing section which is used for the Monocoupe. This section is also used for Lindbergh's Ryan, the Yackey Monoplane and many other successful types.

is by means of four $\frac{3}{8}$ inch nickel steel bolts passing through single lugs extending from the spars, and going through a box fitting at the upper fuselage joints.

The wing covering is of first grade airplane cloth stitched to the ribs at intervals of five inches outside of the slipstream, and three inches inside. Six coats of nitrate dope are applied to protect the surface. Berryloid colors are optional with purchaser.

The Monocoupe is powered with a radial aircooled five-cylinder Detroit Air Cat motor developing 75 h.p. at 2000 r.p.m., and weighing 220 pounds. This motor is equipped

with two Scintilla magnetos and a Stromberg carburetor. Controls are actuated by the conventional hard wire sliding in an aluminum tube. Gasoline is fed to the carburetors by gravity from the two tanks in the wings. Copper tubing and Tite-Flex is used for all fuel lines.

The oil tank is situated behind the engine. Two gallons of oil are carried; the oil is circulated by an integral gear pump.

Exhaust gases are led from the ports by $2\frac{1}{4}$ inch flexible steel tubing extending from each cylinder to a steel exhaust pipe under the fuselage, well away from the fabric.

Eight $\frac{3}{8}$ inch nickel steel bolts hold the engine to its mounting ring.

The ailerons are of rectangular form, directly attached to the main rear spar by three pin hinges. Both the spar and the torque member of the aileron are reinforced at the hinge points. Aileron area is $12\frac{1}{2}$ per cent of the main wing area.

The fuselage is of welded steel warren truss construction shaped to give plenty of room and comfort in the cockpit with a quick reduction in depth and width aft of the cockpit. The overall length of the fuselage is $16\frac{1}{2}$ feet including the engine mount. The cockpit is 32 inches wide, 43 inches high, 30 inches deep, richly upholstered with Ca-Vel and enclosed by Pyralin windows which can be opened at will. Main controls are on the left side, dual control being optional. A door is provided on the left side, or becomes optional with those preferring right hand throttle.

All tubing is 20 gauge (.035) with the exception of the 18 gauge member (.049) which takes the loads from the wing brace struts, and the landing gear and rudder post which are also heavier. The tubes satisfy army specification 10225.

The engine mount can be detached by removing four $5/16$ inch nickel steel bolts. The mount is made of six chrome molybdenum steel tubes welded to the mounting ring at four points. Attachment bolts are under double shear. Very little vibration is transmitted to the cockpit.

The weakest member of the fuselage is 13 per cent stronger than the load factors require.

The chassis is of conventional straight axle, and spreader tubes with rubber cord shock absorbers. The tread is 4 feet 9 inches. The tail skid is 1" steel tubing, entirely full floating with no bolts to shear.

All tail surfaces are made of welded 10255 tubing. The stabilizer is sturdy enough to permit a person to sit on its edge without excessive deflection. It is braced by two streamlined 10-32 wires. Neither the rudder nor elevators are balanced.

Controls are of conventional $\frac{1}{8}$ inch flexible cable-and-pulley type with stick control for elevator and ailerons and pedal control for the rudders.

Instrument equipment consists of an oil thermometer, altimeter, oil gauge, tachometer and clock.



The Monocoupe is a practical light 2-passenger cabin airplane.

EDO PONTOONS MAKE AIR-KING
AN EFFICIENT 3-PLACE SEAPLANE.



AIR-KING AIRPLANES

FOR sport or commercial flying there is no substitute for the Air-King. At the low price of \$2100 (Complete with motor and instruments) it offers the widest range of diversified flying of any ship in its class.

It is particularly adapted to student training, passenger service, sport use,

aerial photography, cross country tours—in fact for any purpose requiring a safe fast ship—easy to land—quick take off. Sturdy construction (to withstand hard usage of student solo work) and absolute dependability.

Write or wire for literature and delivery dates.

National Airways System Field 8 Lomax, Ill.



THE DE HAVILLAND "TIGER MOTH" RACING AIRPLANE

THE TIGER MOTH, a light racing monoplane built in England, is Captain De Havilland's latest product. Tests of the first of two machines built were carried out with a Mark II Cirrus engine. On completion of tests she was taken back into the shops to be fitted with a special racing engine designed for her by Major F. B. Halford in collaboration with Captain De Havilland. Meanwhile, the second machine was being completed with a Cirrus engine.

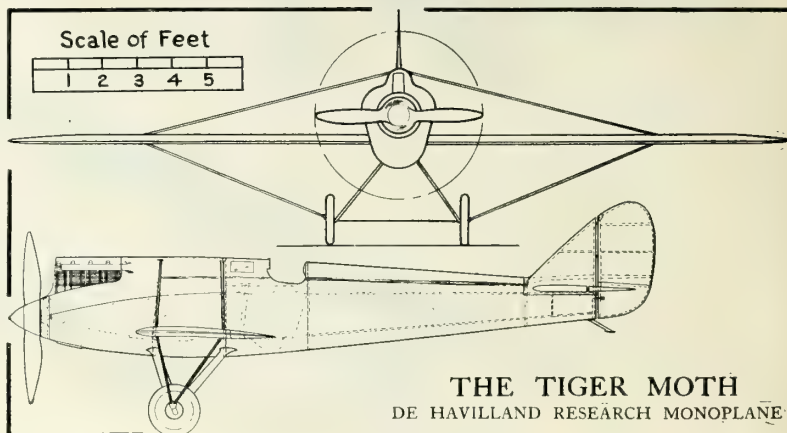
The D. H. engined machine was ready for flight a few days before the King's Cup Races, but, as its engine had not been finished in time to undergo the Air Ministry type test, the sole representative in the race was the Cirrus engined model.

The world's speed record, 186.47 m.p.h., was established by Captain Broad on August 24 with the Tiger Moth powered with a De Havilland engine. He also made an altitude of over 20,000 feet in 17 minutes on August 29 with the same machine. As Captain Broad carried no oxygen apparatus, he made no attempt to fly higher although the plane was climbing at the rate of 1000 feet per minute at 20,000 feet altitude. It is believed the ceiling is in the region above 30,000 feet. The air-cooled De Havilland engine develops about 130 h.p. at the r.p.m. at which it is used although its standard rating is only 32 h.p. It has four cylinders in line. The Mark II Cirrus engine, powering the other Tiger Moth, develops 84 h.p.

It is probably one of the smallest machines built, as it combines low power, moderately high loading, and no load carrying capacity; the combination is a somewhat unusual one and represents practically a new class of machine. The span is 22 feet 6 inches fitted with touring wings designed for the King's Cup Race, where span was the criterion decided upon for handicapping purposes. The wing area is about 74 square feet. A modified R. A. F. 15 thin wing section is used.

The landing speed is 60 m.p.h. with touring wings. When giving consideration to wing area it was decided not to seek high top speed at the expense of an abnormally high landing speed.

The minimum factor of safety used is $7\frac{1}{2}$, and at all vital points which are not duplicated this figure has been increased. All wires have been duplicated and the entire

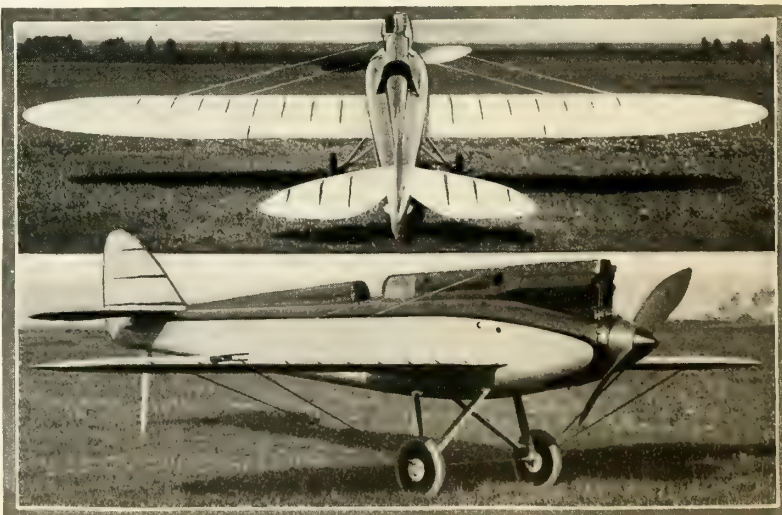


structure has been carefully studied for rigidity and the avoidance of "flutter."

The fuselage is of simple construction, similar in most respects to that of a standard Moth. The fuselage is only 17 inches wide. To permit the pilot to get in and out, the windshield and part of the deck are hinged to open like doors. In only one place does the skin have curvature in two planes; this is at the section below the pilot which has been constructed of two

laminations of spruce built up on a jig and glued and screwed to longerons.

The undercarriage is unusual and interesting. The cranked axle and radius rod are rigid and provide bracing for the wing structure, the wheels having the shock absorber mechanism built into them. Since any damage to the undercarriage would affect the safety of the main flying wires, special care has been taken to make this unit substantial.



The De Havilland "Tiger Moth" has a speed of more than 186 miles an hour.

Announcing the PLACE

ALEXANDER EAGLEROCK CABIN MONOPLANE

— powered with Wright Whirlwind motor and built to justify the Eaglerock slogan "Performance with Economy." Construction will start at once.

The new ship will be tested and proved before being put on the market. Watch for details and prices later.

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 Florida—Wesley N. Raymond, Orlando, Fla.
 Georgia—Georgia Airways, Inc., Box 329, Atlanta, Ga.
 Ky. and Tenn.—Datin Eaglerock Sales Co., 2031 Central, Memphis
 N. C. & Va.—Charles Flying Service, Box 44, North Side, Richmond, Va.
 Northern Iowa—Pioneer Flyers, Inc., Mason City, Iowa
 Indiana—Ray Kuhl, 217 No. Main St., Mishawaka, Ind.
 Michigan—Niles Airways, Niles, Michigan
 N. Y., N. J. and Conn.—Atlantic Airways, New Rochelle, N. Y.
 Wisconsin—Hall Aircraft Co., 101 Scott St., Wausau, Wisconsin
 E. and S. Ill.—Bridgeton Aircraft Corp., 223 Pierce Bldg., St. Louis
 W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 228 W. 12th St., K. C., Mo.
 Okla. & Tex. Pan.—Southwestern Airplane Sales Corp., Britton, Okla.
 N. M. & Cen. Texas—Marion P. Hair, P.O. Box 420, San Antonio, Tex.
 Southern Texas—Aero Corporation of California, Western Ave., at 99th St., Los Angeles
 So. Cal. and Ariz.—Jas. L. Mayberry, 1210 B'way, Fresno
 W. Washington and W. Neb.—Wyoming Airways, Inc., Casper, Wyoming
 Wyo., Mont. & N. Dak.—Rapid Air Lines, Inc., Rapid City, S. D.
 S. Dak. & N. Neb.—C. E. Steele, Dodge City, Kansas
 W. Kan. and E. Neb.—Lyle H. Scott, 328 2nd St., Marietta, Ohio
 La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
 W. Va. and E. Ohio—Rocky Mountain Airways, Salt Lake City
 Utah—Rocky Mountain Airways, Bry Block Merc. Co., Memphis, Tenn.
 Mississippi—Tri-States Airways, E. W. Robertson, R.R. No. 5, Alexandria, Va.
 Maryland and E. Pennsylvania—Errett Williams, Spartanburg, S. C.
 So. Carolina—R. I. and Mass.—Massachusetts Airways Corp., 1597 Main St., Springfield, Mass.
 Me., N. H., Vt., R. I. and Conn.—Lt. Jack P. Morris, Pittsburg Airport, Pittsburg, Pa.
 W. Penn. and N. E. Ohio—Indiana-Ohio Aero Corp., 203 Carroll Bldg., Ft. Wayne, Ind.
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OX5 — 90 H.P.

Price \$2475 Denver

Popularity for this type Eaglerock is evidenced by the fact that orders for 85 ships are yet to be filled.



ASSOCIATED WITH ALEXANDER INDUSTRIES
 Room 403, Alexander Industries Bldg., Denver, Colo.

Say you saw it in AERO DIGEST



Jack Irwin and the trophy he won.

METEORPLANE WINS EFFICIENCY CONTEST

JACK Irwin won the Aircraft Performance Trophy awarded by the Visalia Chamber of Commerce at the Visalia Air Meet recently. The Visalia, California Municipal Airport, an 80-acre field was formally opened at the beginning of last April. Irwin won the trophy flying his Irwin M-T-2 Meteorplane in an efficiency contest against nine other planes which ranged from 90 to 180 h.p. The Meteorplane is rated at 20 h.p.

The trophy was awarded on a basis of points earned for speed and mileage against fuel consumption in relation to useful load per h.p. Jack covered 210 miles in his little ship in 2 hours and 37 minutes, and used only $5\frac{1}{4}$ gallons of gasoline and 1 quart of oil.

A description of the M-T-2 appears in *AERO DIGEST* for last December. The Meteoromotor, a four-cylinder air-cooled motor is standard equipment. It develops 20 h.p. at 1900 r.p.m. The ship is a biplane and has a span of 20 feet with a single strut and wire bracing at either side. Its weight is less than 450 pounds fully loaded and yet has a safety factor of more than 7 at all points.

THE WAY TO CONTROL A SHIP IN SPINNING

BY CLOYD P. CLEVINGER

Cloyd Clevinger, chief pilot of the Alexander Aircraft Company, Denver, is testing an average of ten ships per week. He has made an intensive study of the effect of control during these tests and the following article will be of interest to all pilots.

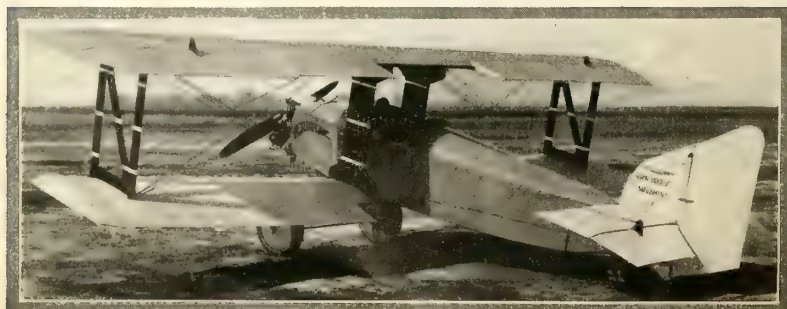
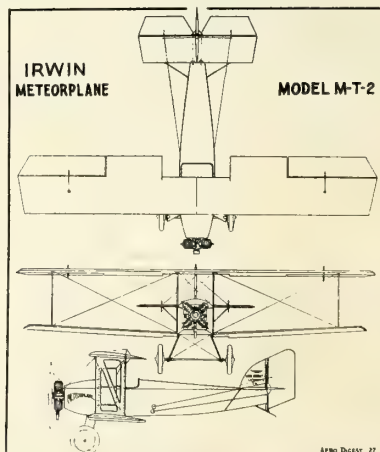
A GOOD deal of worry exists among pilots concerning the operation of the controls in cranky spins and flat spins. Some of the ships I test spin on the first flight and have to be re-rigged.

There is a use of the ailerons which helps auto-rotation and an opposite operation which counteracts it. I believe that every pilot should thoroughly understand and practice this control usage.

When taxiing in dead air or against the wind, the quickest way to turn to the left is to apply left rudder and right stick. In fact it is possible in dead air to taxi all over a field by holding the rudder in neutral and applying right stick to turn to the left and left stick to turn to the right. This of course is caused by the drag effect of the lowered aileron.

The application of this practice to spinning is as follows:

To do a right spin:—The pilot pulls the stick back and applies right rudder. As the ship starts to fall to the right, if the pilot will still hold the stick back and apply left aileron, the ship will drop into the spin quicker and accelerate its spinning motion.



The Irwin type M-T-2 Meteorplane powered with the 20 h.p. Meteoromotor.

The reason for this is very plain. Left stick lowers the right aileron. When the ship is in spinning position the wing itself is stalled and a lowered aileron being far beyond its critical angle has a large drag coefficient and has the net effect of being an efficient brake at the wing tip. This drag on the inner wing accelerates the spinning motion and auto-rotation becomes naturally more pronounced.

To stop a right spin:—As left rudder and forward stick is applied the stick should be moved smartly to the right. This action lowers the left aileron thereby placing a drag on the outer wing of the spin. Of course, as soon as the rotation is stopped the controls should be neutralized, and the ship recovered from the dive in the normal way.

As a spin flattens out and increases its velocity of rotation the rudder strikes the air more and more sideways, approaches and passes its critical angle of attack and consequently loses its ability to stop the rotation of the tail. The force exerted through the wings and known as auto-rotation makes the tail rotate once the spin is started.

Of course ships stop spinning when the rudder is neutralized. This only occurs, however, in ships where the force exerted by auto-rotation is so small that the vertical fin surface on the tail overcomes it. However, the drag effect of the ailerons never disappears. In fact, it increases as the stalled condition of the ship becomes worse.

As a direct proof of this contention I have taken visiting pilots up on test flights with dual controls attached and have had them hold the rudder in neutral while I would spin the ship either way, accelerate, or slow down the rotation, and recover from the spin solely by the use of the ailerons and flippers.

As an illustration of a left spin with the rudder in neutral:—Pull the ship into a stall at the same time tilting it slightly to the left. As it stalls it will start to fall to the left. At this point pull the stick to the rear and apply right stick. The ship will start a left spin. If the stick is still held back but more right stick applied, the velocity of rotation will increase. To stop the spin apply forward and pull left stick.

The simple rule is: "Move the stick towards the direction of rotation to stop a spin."

SOCKET WRENCH SET

THE new Bonney CV chrome vanadium socket wrenches, put out by Bonney Forge & Tool Works, Allentown, Pa., have met with such enthusiastic reception that the company now announces an additional set to sell at \$19, with attractive discounts to mechanics and dealers.

This set consists of ten chrome vanadium hexagon sockets from 7-16 to 7-8" inclusive and the following chrome vanadium handles: ratchet, sliding "T", 13" brace (speeder type), 5" extension, 10" extension and universal joint.

Standard J 1 airplanes—

completely rebuilt and recovered with
factory rebuilt OX5 engines, set up, test
flown, and ready for fly-away delivery . .

\$1000

Standard J 1 airplanes—

with guaranteed overhauled Hisso Model
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\$1500

De Haviland Air Mail planes—

with Liberty "12" motors . . . **\$2500**
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with Liberty "12" motors . . . **\$7500**

Orioles—3-place

with 180 h.p. Hispano motors
wonderful performance . . .

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1150 Factory rebuilt OX5 engines ... **\$350**
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ROBERTSON AIRCRAFT CORPORATION
St. Louis Flying Field **Anglum, Missouri**

WESTERN NEWS



Los Angeles welcomes home its air heroes—Art Goebel and Lieut. W. V. Davis.

Wide World.

WESTERN AIR EXPRESS PASSENGER AIRLINE

LOS ANGELES-SAN FRANCISCO

ESTABLISHMENT of a model passenger airline between Los Angeles and San Francisco as an actual demonstration of performance and safety, which will be available as an incentive for further development of passenger airlines in the United States, has been made possible by an equipment loan to Western Air Express from the Daniel Guggenheim Fund for the Promotion of Aeronautics.

In accordance with their announcement of July 9th, trustees of the Fund have selected the Los Angeles-San Francisco route for this practical experiment in air transport. Planes purchased with money obtained under the equipment loan plan will be of the most modern, multi-engined design of maximum safety and comfort. They will have cruising speed of about 120 miles an hour with a capacity cargo of nearly two tons.

The airline distance between Los Angeles and San Francisco is 365 miles and the time necessary for flight over this route will be approximately three hours. Planes will leave either terminal at 10:30 o'clock in the morning and will arrive at the other terminal at 1:30 o'clock in the afternoon. Airports in both cities are situated within 30 minutes from the business sections so that office-to-office movements may be completed within four hours, as compared with the 13½ hours now required by railroad.

Western Air Express will provide the latest conveniences for its passengers on this airline. Lunch will be served in the air and magazines, the latest editions of newspapers and radio entertainment and market reports will be available. Planes will be of such design that they can remain in the air with one engine disabled, thus practically eliminating the possibility of forced landings.

The aeronautics division of the Department of Commerce, through William P. MacCracken, Jr., Assistant Secretary of Commerce for Aeronautics, will cooperate by installing on this model airway every aid to aerial navigation now available.

WORLD FLIGHT MEET

THE Third Annual "World Flight Commemoration Meet" which is to be held at Clover Field, Santa Monica, Calif., on October 9th in conjunction with the State Real Estate Convention promises to eclipse all previous records for this meet. Plans under way contemplate not only air races, but an exposition of modern commercial aircraft and accessories. Some of the exhibitors of aircraft who have signified their intentions of exhibiting planes are: Jack Maddux Airlines; three Ford all-metal planes; Prudden all-metal commercial plane; B. F. Mahoney, Ryan monoplane; Breese monoplane; Lockheed "Vega" monoplane; International biplane; Bach tri-motored monoplane; Thunderbird biplane. The Douglas Company will exhibit their latest military, observation and bombardment planes. Further exhibits are expected from the commercial airline operators from this area.

One of the novel features planned is the airplane "treasure hunt" wherein all of the contestants, dressed in pirate costumes, take off under sealed orders and proceed to various fields surrounding Los Angeles, at which fields they will find further instruction hidden at some point on the field. Eventually their orders will land them back at Clover Field where they will seek a pot of gold which is to be hidden at the end of the "rainbow" at Clover Field. Other events

on the program will be special races and trophies for pursuit planes, observation and bombardment planes. A motion picture company is arranging to have a huge camouflage battleship on the field which will be made the target for an attack from bombing planes.

It is expected that many of the contestants entered in the National Air Races at Spokane will fly back to the east via the southern route and participate in these events. The executive committee appointed to handle the event which is being held under the auspices of the Southern California N. A. A. Chapter is composed of the following: D. E. McDanel, president, Southern Calif. N. A. A. Chapter, chairman, contest committee; Charles F. Willard, treasurer, Southern Calif. N. A. A. Chapter, chairman, finance committee; Lt. Walter K. Burgess, Commanding Officer, Clover Field, chairman, operations committee; Frank E. Samuels, Pacific Coast representative of AERO DIGEST, chairman, display committee; Robert Pritchard, editor of *Western Flying*, chairman, publicity committee; H. H. Wetzel, vice-president of The Douglas Co., chairman, program and entertainment committee; Charles H. Babb, secretary Southern Calif. N. A. A. Chapter, executive secretary.

PAT'S FIRST YEAR

THE first anniversary of air mail service between all coast cities was celebrated during the week of September 11-18. Air mail was first flown between Los Angeles and Seattle by Pacific Air Transport on September 15, 1926. The route covers 1,100 miles of mountainous terrain and is flown each way six days a week on a 14-hour schedule, a saving over train of 33 hours. During the year the coastwise planes have traveled more than a million miles including scheduled and special flights.

The first purchase of planes, made by Vern C. Gorst, president of the company, included six Ryan monoplanes powered with Wright Whirlwind motors. Since that time the fleet has been increased to twelve ships including a six-passenger cabin monoplane, and additional passenger planes are to be added soon.

Gorst has been identified with transportation in the West since he was 12 years old and has had a varied career, operating every known conveyance from row boat and pack mule to speed launches and motor bus fleets. As a boy he rigged a sail on a dug-out and ferried provisions across Port Orchard Bay. Later he mushed with dogs in Alaska, packed water on mules in Nevada, operated a towing service on Puget Sound and owned an automobile bus line in Oregon and California.

The P. A. T. operates 26 beacons purchased and installed by the company. These include ten directional beacons of 7,500,000 candle power and 16 intermediate beacons of 400,000 candle power.



Frank Samuels enroute to Spokane in Lt. Frye's Aero Corp. of California plane.



Sisterships

The Spirit of St. Louis and the New RYAN BROUGHAM—Five-Place!

THIS new five-place Ryan Brougham... developed from the famous plane designed and built for Colonel Lindbergh... reflects in quality and workmanship a concentration on a single type and model. It is thoroughly engineered, tested and proven. The interior, completely upholstered in mohair, has ample room, comfortable seats, perfect visibility, and is easy of access. Ownership of a Ryan Brougham assures you the utmost in a modern airplane. ✂ ✂

Luxurious in Appointments. Distinctly Individual. Wright Whirlwind Equipped,
 ✂ ✂ \$9,700 at San Diego. ✂ ✂



The B. F. MAHONEY AIRCRAFT CORPORATION, San Diego

CONTACTS

By FRANK E. SAMUELS

HERE is a chance for every aviation booster on the West Coast to do his or her bit in putting over the biggest aeronautical event that the west has ever held. On September 17th Capt. Charles A. Babb, secretary of the Southern California N. A. A. Chapter and Capt. William A. Frye, president of the Long Beach Chapter left for St. Joseph, Mo., via air mail route to attend the National Convention of that body, with the intention and hopes of bringing the National Convention and races to Los Angeles in 1928. Capt. Babb and Capt. Frye took with them an official letter from the Governor of California, the Mayor of Los Angeles, the Los Angeles Chamber of Commerce and proxy votes of every chapter on the West Coast. We are all certainly pleased that they were so successful. The 1928 National Air Races will be held in Los Angeles!

WHILE at San Diego I had the pleasure of meeting Walter Chambers of the Pittsburgh *Sun-Telegraph* and advertising manager of the Mayer Aircraft Corp., of Pittsburgh, Penna., who with J. W. Smith, chief pilot of the corporation, was taking delivery of the first of five new Ryan Broughams, "The Pride of Pittsburgh," from A. J. Edwards, sales manager of the B. F. Mahoney Aircraft Corporation. This beautiful cabin job will be the first cabin plane owned and operated in Pittsburgh and will make its headquarters at Mayer Field, Bridgeville, Penna. Mr. Chambers with Mr. Smith as pilot, will fly the ship east. The other four planes of the order will be delivered at 30-day intervals. Mr. Mayer, principal owner and head of the corporation, a multi-millionaire of Pittsburgh, operates the flying field and airline as his pet hobby.

A. J. EDWARDS took me through the Mahoney plant while I was in San Diego. They are now working on a two-a-week production basis and are sold solid for the next ninety days, with orders enough ahead to keep them busy for the next year. The plant is being handled as a real business proposition, and the efficient manner in which the planes go through the different stages of construction is a credit to the plant manager, W. H. Bowlus, and his well liked assistant, Bert Tindale.

THE Prudden-San Diego Aircraft Corp. is just finishing up their first all-metal cabin monoplane and hope to give it its first trial flight before October 1st. The ship is certainly built ruggedly and should be a wonderful ship for long distance routes.

THE Russell Parachute Company are making experiments for a San Diego newspaper delivery firm in dropping packages of newspapers by parachute from an airplane for out-lying districts and small towns. The indications are that the entire Imperial Valley will within a very short time have their daily San Diego papers delivered to them by airplane almost as soon as they are on sale in San Diego.

THE American Aircraft Corp. of Los Angeles, distributors of Waco airplanes, will have, when completed, one of the finest commercial airports in the west. They have a long lease on a tract of land, with 1,600 feet frontage on Mesa Drive by nearly a mile deep, between the terminus of the Pacific Air Transport and the Rogers Airport, within five minutes' drive from the center of the business section of Los Angeles. The land has been leveled off and rolled down to a smooth surface and has a runway nearly a mile long, running east and west with the prevailing winds, and about 150 feet wide. There are to be ten modern hangars, three of which are already finished. The field will be lighted for night flying, have a gas and oil service station, a machine shop to service their own and visiting planes, transportation facilities for visiting pilots, offices, wind cones and in fact everything necessary to make the airport modern in every respect.

Charles (Doc) Whitney will have complete charge of the field and also supervise flying instruction. J. B. Alexander will continue as sales manager for Wacos for California. We may look for a considerable amount of activity around this latest Los Angeles airport as everyone connected with it is well known and liked by the entire fraternity.

THE International Aircraft Corp. have just finished installing the first Siemens-Halske motor in their latest four-place job which was on exhibition at the Spokane Air Races.

Al Ebrite of the sales department of International left September 10th in a new International F-17 for points in Texas, Oklahoma and Kansas to organize dealers and distributors. This is the beginning of marketing their ships east of the Rockies; heretofore their product has been confined to the West Coast.

Sales Manager Spear reports that sales are still on the increase and that the International factory is up to the point of produc-

tion now where they can make almost immediate delivery. They have just delivered a Whirlwind F-17 to Mr. Wells of the Burdett Airlines which climbed 5,000 feet with four passengers in 4½ minutes.

CAPTAIN WILKINSON of the Universal School of Aeronautics has started classes in navigation and meteorology. Lectures and classes are held on Tuesday and Thursday nights and the responses they are receiving to these lectures are quite encouraging, Captain Wilkinson reports. He also reports having received 152 replies to his advertisement in the *AERO DIGEST* for the month of August with every indication that September will give even greater returns. The boys seem to want to win their wings.

WALDO WATERMAN, one of the pioneer figures of American aviation, recently joined the staff of the Bach Aircraft Co. at Santa Monica, Calif. Beginning in the glider days of 1909, Waterman constructed his first ship, an old pusher type at San Diego. He taught himself to fly and has been piloting planes of all types for more than eighteen years. He is at present specializing in the engine branch of the industry.

ONE of the latest airports of Southern California is known as the Frank Baker Aircraft Flying Field, situated just west of Culver City. Their equipment consists of two Ryan M-1s, two Waco-10s, and a Curtiss JN for student instruction. Bob Blair is manager of the airport and is one of our oldest and most reliable pilots. Aerial photography, instruction, passenger flying and long distance cross-country flights will be engaged in. The field is nicely equipped with modern hangar, offices, wind cones, etc. J. Floyd Smith, designer of the Smith parachute, is connected with the airport and will give parachute instruction to the students as a part of the regular course of aeronautical ground and flying instruction.



A model airport planned for San Diego, California—the proposed Lindbergh Field.

The INTERNATIONAL



RUGGED--

SWIFT--

*International F-17, 4-place Sport
and Commercial Ship. Whirlwind Model*

BEAUTIFUL!

Oleo Landing Gear

Double Ailerons,
set-in type

Motor Cowling
neatly streamlined

All Empennage
Controls Enclosed

40-Inch Passenger
Cockpit, Upholstered

Oversized Wind-
shields

N Struts thruout

Octagon Shaped
Haskelite Plywood
Fuselage

Box Beams

Steel and
Duralumin Fittings

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INTERNATIONAL Aircraft CORPORATION
LONG BEACH, CALIFORNIA

AN OIL MAN'S VIEWS ON AVIATION

By P. H. DIXON

AVIATION offers the solution to the greatest problem that now confronts oil producers of America according to William G. Skelly, president of the Skelly Oil Company.

When commercial aviation reaches its logical development, there will be no problem of over-production of crude oil, Skelly says. The airplane will become the greatest consumer of the refined products of crude oil and development of aviation is of utmost importance to the oil industry, he declares.

"The development of commercial aviation in the next few years will mean a great deal to the petroleum industry," Skelly said. "It is gratifying to see the big oil companies evincing a genuine interest in aviation at this time. We should do everything in our power to encourage it.

"No longer does anyone doubt the feasibility of regularly established mail and passenger carrying routes. Such routes will be developed as fast as the proper landing fields and airports are established.

"I can look into the future—and it is not so far distant at that—and see cities like Tulsa, St. Louis and Kansas City as centers of airlines radiating into far distant communities, for transportation of not only people and mail but fast freight as well.

"Recently I made a trip by train and horseback into a remote part of New Mexico. The journey required more than 24 hours' time from Tulsa. A friend of mine made the same trip in an airplane and arrived in less than four hours after the time he started.

"Internal combustion motors in automobiles, will, of course, consume a great percentage of our gasoline and lubricating oil output for a long time to come but now is the time to think of developing new and greater means of consumption. Aviation

holds the greatest potentialities in this respect.

"Commercial aviation has been developed to an unusual degree in Europe. It is still in swaddling clothes in this country, where, on account of the vast spaces, it is needed more than in Europe.

"My company, as well as many other oil companies, now is engaged in developing a fuel for airplanes that will give maximum efficiency and yet be lighter in weight than gasoline now in use. We are working hand in hand with those who are devoting their lives to the promotion of aviation.

"If there were a million airplanes in America to-day—and we will see the time when there will be many more than that number—we would not be worried about the over-production of crude oil for a million planes would absorb the huge surplus and demand more.

"The pioneering has been done in aviation. It now remains for us to develop the proposition until every community now on a railroad and some that are not will be on one or more regular airlines."

N. W. MOUNTED POLICE HAVE NEW STEED

THE Royal Northwest Mounted police have a new kind of steed, which has been named the "Queen of the Yukon," a Ryan Brougham monoplane, product of the B. F. Mahoney Aircraft Corporation.

Piloted by A. D. Cruickshank, district representative of the Mounted Police, their new "mount" will cover the 360 miles of icy waste between White Horse and Dawson on the Canadian Yukon in four and a half hours. Mail and passengers will be carried over the same route that now requires from eleven to fourteen days to negotiate by the next fastest means of locomotion, dog sleds.

As in other Ryan planes, Haskelite plywood is used extensively in the construction of the plane, because it has always stood up under severe climatic conditions.

NORTHWEST AIR NEWS

By F. K. HASKELL

TEN thousand persons turned out for the first air circus at Silverton, Ore., on August 29th, given by the Albert Reeves post of the American Legion to dedicate the new air field. Lieut. Kelly from the Vancouver field led the ten planes in some wonderful flying.

YAKIMA, WASH. aviators, at a meeting held on August 29th, formed an aero club with Elbert Amburn as president.

SOME forty students, ranging in age from 16 to 40 years, are now registered for the fall course at the Rankin Flying School, Portland, Ore., which is now under the supervision of J. Kegerries. Paul King from Aberdeen, Wash., 16 years old, is the youngest student; Milo S. Winters, Grants Pass garageman, 40 years old, is the oldest.

THE Longview, Wash., Aero Club has filed incorporation papers. Directors are C. Y. Bowers, Fred Hess, Jack Manning, H. L. Beverly and Joe Ables. Ables was elected president and Manning secretary-treasurer. A suitable landing field is now being constructed.

FORTY-FIVE acres of land at \$300 per acre have been purchased by the City of Centralia, Wash., for an aviation field. The runway is 200 feet in length. Floodlights are being installed and hangars and a service station erected.

CONSTRUCTION of a modern airport building, equipped with hangars for one large and three small planes, have been started at Aberdeen, Wash., on the Port of Grays Harbor Field. The building will be constructed jointly by Aberdeen and Hoquiam.

RECORD IDAHO FLIGHT

A RECORD for rapid air transportation of passengers over one of Idaho's most rugged sections was recently established when Pilot Philip Love, who is accompanying Colonel Lindbergh on his tour of the United States, flew over the proposed State Airway No. 4 with two passengers and baggage from Boise to Butte, Mont., in three hours and five minutes. This is the fastest trip ever made between Boise and Butte by passengers in any sort of conveyance and demonstrated the practicability of this air route. The passengers were Donald Keyhoe of the Department of Commerce, personal aid to Colonel Lindbergh, and C. C. Laidmant, engine expert from the Wright Aeronautical factory.

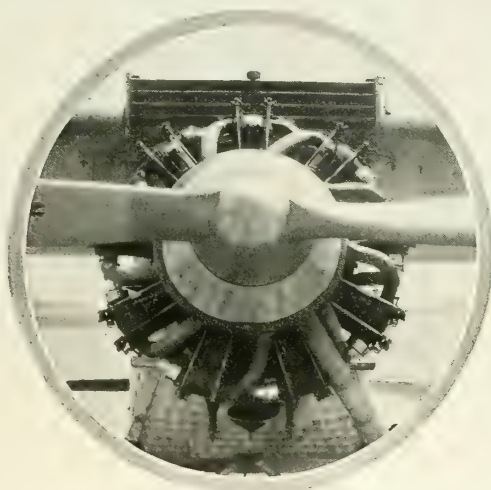
Idaho's mineral empire will develop more rapidly when mining properties become easily accessible through air transportation. Airway No. 4 will connect such mining properties as the Deadwood, the Livingston, the Red Bird properties of the Ford Motor Company, and many other lesser developments which promise many millions of tons of valuable metals.



Kenneth Boedecker, Wright Aeronautical Corp. representative, and A. D. Cruickshank, pilot of the latest mount of the Royal Northwest Mounted Police.

Here is POWER for you!

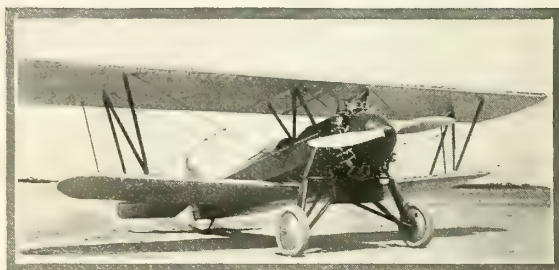
230 horsepower
at
1200 R.P.M.



AIR COOLED
OR
WATER COOLED



RYAN MONOPLANE



STEARMAN BIPLANE

Some recent installations
of the



A dependable airplane engine at a price you can afford to pay

(Less than one-third the cost of any other airplane motor in its class)

Nine cylinder radial, embodying the features of acknowledged leadership and backed by an organization of successful experience.

Write for particulars

MENASCO MOTORS COMPANY

230 South Hamilton Drive

BEVERLY HILLS

CALIFORNIA

NEW ALL-METAL PLANT IN SAN DIEGO

THE Prudden-San Diego Airplane Company, organized last May by a group of San Diego capitalists, is now well established in a modern plant situated on the bay front and working steadily.

George Prudden, formerly chief engineer for the Stout All-Metal Airplane Company of Detroit, president of the San Diego concern, announces that its initial product is to be a tri-motor, all-metal, seven place cabin transport. The entire transport, now under construction, will be built of duralumin. It will be equipped with three Siemens-Halske motors for which T. Claude Ryan, founder of the Ryan Airlines, Inc., has obtained the distributing and manufacturing rights for the United States. The ship is to have 1000 pounds payload capacity.

The Prudden-San Diego Company's plant embraces 10,000 square feet of floor space, permits of daylight operations and occupies a convenient site on the bay front. It is next door to the factory of the B. F. Mahoney Aircraft Company.

Prudden is a pioneer in aeronautical activities and his first work in that field dates back to 1911 when he built and flew two Chanute gliders. During five years with the Stout Company he gained an enviable reputation and left that firm only to form his own company in San Diego.

Mr. Prudden is serving on the staff of the San Diego Chamber of Commerce as aeronautical engineer.

CHICAGO NORTHWEST AIR TRANSPORT CO.

THE Chicago Northwest Air Transport Company has been organized under the laws of the State of Delaware, capitalized at \$750,000, to transport passengers, mail and express between St. Paul, Spokane, Portland and Seattle. The route will be via Fargo, Aberdeen, Bismarck, Glendive, Billings, Butte, Missoula, Spokane, Seattle and Portland. Stinson monoplanes will be used. They plan to fly over the mountains in the daytime, and over the plains at night.

Officers of the company are: H. J. Lynch, president; A. S. Mooney, vice-president; M. H. Lynch, secretary and treasurer. H. J. Lynch is mentioned in "We" as being one of Colonel Lindbergh's early barnstorming partners.

AIRPORT FOR DOUGLAS

GEORGE E. BUXTON, who recently returned to Douglas, Arizona, after making a study of aviation on the coast, strongly urges immediate action on the completion of Douglas Airport so that the city may be designated as a port on the national airways.

Three corporations are about to start transcontinental airlines, one of which, Mad-dux, Inc., the Ford representatives in the west, will start passenger service from Los Angeles to Dallas within the next three months.

1928 AIR RACES AT LOS ANGELES, CALIF.

LOS ANGELES was awarded the 1928 National Air Races and the annual convention of the National Aeronautic Convention.

At the sixth annual N. A. A. convention held at St. Joseph, Mo., September 20-21, Porter Adams was reelected president; Elmer Sperry, vice president; Valentine Gephart, secretary; and Colonel B. F. Castle, treasurer.

Governors-at-large elected were: Godfrey A. Cabot, Boston; Glenn L. Martin, Cleveland; J. Carroll Cone, Little Rock, Ark.; William B. Mayo, Detroit, and Orville Wright, Dayton, Ohio.

MAIL BIDS ASKED

PROPOSALS for the transportation of air mail under contract have been invited on the following route: Cheyenne, Wyo., via Denver and Colorado Springs, to Pueblo, Colo., and return. Distance each way approximately 199 miles. Bids will be received at Post Office Dept., Washington, D. C., until 12 o'clock noon, October 4th.

The contract of the Colorado Airways, Inc., for transporting mail over this route was cancelled on September 3rd by Postmaster General New and the Boeing Air Transport, Inc., holding the air mail contract on the western leg of the transcontinental route, between Chicago and San Francisco, have taken over the service on the Cheyenne-Pueblo route on a temporary basis.

For the discriminating buyer



THE WHIRLWIND MAIL PLANE

ANNOUNCING

THE REMOVAL OF OUR PLANT TO A MORE CENTRAL DISTRIBUTION POINT—PLEASE ADDRESS ALL COMMUNICATIONS TO

THE STEARMAN AIRCRAFT COMPANY
Wichita, Kansas

KINNER

On September 3rd, the new A V Kinner 5 cyl. radial air-cooled motor installed in a Kinner 3 placed aister carrying a useful load of 575 lbs. completed a trip from Glendale, Calif. to Boston, following the air mail route via Salt Lake City in 34.5 flying hours, consuming 240 gallons of gasoline and only 5 quarts of cylinder oil. One landing was made at Chenykee field, Wyo., which has an altitude of 7080 feet. With a full load it took a run of only 500 feet to take-off. *Could anything else be done to prove this product?*

Price of plane complete, \$3350

Price of motor only, \$1675

Let us tell you more, if interested

Kinner Airplane and Motor Corporation
GLENDALE, CALIFORNIA

The THUNDERBIRD

"The wings of the wind"



Built to Last

A sturdy commercial plane combining beauty, strength, and durability with a low landing speed and a high cruising speed.

A QUALITY SHIP

AT A QUANTITY PRICE

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THE AERO CORPORATION *of* CALIFORNIA

Motor Repairing and Overhauling
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always obtainable**

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NEWS OF THE AIR SERVICES



Henry Ford and Major General Patrick at the Gordon Bennett balloon race.

Wide World

ARMY AIR CORPS LABORATORY OPENS OCT. 12

THE new home of the Army Air Corps laboratory at Wright Field, near Dayton, Ohio, will be formally opened October 12. War Department officials will attend, and the First Pursuit Group will fly from Selfridge Field, Michigan, to participate in the ceremonies.

The Army Air Corps Laboratory, formerly known as the Materiel Division, has played an important rôle in perfecting airplane motors, the radio beacon, parachutes, the earth inductor compass, propellers and airplane designs.

ERRAND OF MERCY

PILOTING airplanes on errands of mercy seems to be a rather frequent practice in the Panama Canal Department. Lieuts. Downey and Percy recently carried some anti-tetanus serum to David, Panama. A woman resident of that pretty Latin-American town was in a dying condition and badly in need of the serum. The distance between Panama City and David, some 240 miles, was covered in one hour and forty minutes each way.

NAVY AIRMEN CITED FOR FLYING CROSSES

THE first strictly service award of the Distinguished Flying Cross by the Naval Board, headed by Capt. O. G. Murfin, was made on September 12 when citations were forwarded to Lieut. Ben H. Wyatt for services on the occasion of the aerial survey of Alaska during the summer of 1926 and to Lieut. (j.g.) Delbert S. Cornwell for heroism during a flight at the Naval Air Station, Hampton Roads, Va., on November 18, 1926. With the exception of the transoceanic service fliers who have been honored with the new decoration, these awards are the first announced.

WITH THE DEVIL DOG AVIATORS IN CHINA

By KENDRICK NOBLE

"ONCE a Marine, always a Marine," they say. And so, when I arrived back at Tientsin and saw the well-groomed "Devil Dogs" marching down the street, with bands playing and flags flying, while overhead a Marine Corps fighting plane was cutting capers that would do justice to a wartime ace, I began to itch for the old khaki uniform once more. Orell said it was only the Prickly Heat coming out again but I knew better. The two and a half years I served during the World War with a mess kit in one hand and a pair of goggles in the other had left too deep an impression upon me to be quickly forgotten.

My old commanding officer, Captain W. E. McCaughy is now Flight Officer of the Third Brigade of Marines stationed at Tientsin, and it was at his invitation that I visited the Marine Aviation Detachment stationed at Hsin Ho about 15 miles below Tientsin on the Rive Peiho.

"Why are the Marines in China?" I asked Captain Mac.

"We are here to protect American lives," he replied proudly, drawing himself up to his entire height of 5 feet 10 inches, and looking for all the world like General Pershing telling Lafayette that, "We are here!"

I jumped on the Mukden Express train and managed to beat a Chinese General to one of the few vacant first class compartments. Then calling for a cold bottle of beer, I managed to while away the fifty minutes to Hsin Ho very nicely.

When I walked into the camp, which was as neat and orderly as any one I have ever seen, the new C. O. Colonel Tommy Turner, Major Francis Thanksgiving Evans, Captain "Nuts" Moore, Lieutenant Bill Wallace and the rest greeted me like a long lost brother, and two minutes later I was parked

in the Colonel's tent which overlooked the Peiho, feeling as much at home as if I had never left the Marine Corps. Only in the old days, the only time I ever got into the Colonel's tent was when I was "on the carpet" to explain why I had done such and such instead of doing so and so.

"It's mighty nice to see you all again, Colonel," I remarked as a starter. "But why are you here in China?"

"We are here to protect American lives," was his proud reply, and I began to realize that General Smedley Butler has done his work well in telling the Leathernecks that they are in the Far East for business and not for the purpose of buying Chinese rugs and Mandarin coats for the girls they left behind.

About that time, Major Evans appeared on the scene in a soft felt hat and a costume that looked like B. V. D.'s but I was told that these "shorts" are worn in the middle of the day out here when the thermometer goes soaring. (It was 112 degrees in the shade the day we arrived in Tientsin.)

Major Evans has been in command of the Aircraft Squadron, West Coast Expeditionary Forces (as it is officially known) ever since they left San Diego, April 6, 1927. He had just received his orders to return to the States and was as happy and frisky as a kitten with a ball of yarn, for he had brought his squadrons out to the Far East expecting to go right into action, but the most excitement they have had yet was the day the wheel came off Lt. White's Boeing Pursuit plane and he landed it in the river for safety sake. White was all right, and was soon rescued together with his plane, but one of the Chinks on shore got so excited he jumped into the muddy waters of the Peiho and boldly struck out for the shipwrecked aviator. It was not until his feet were swept off the bottom and he began to sink did he remember that he couldn't swim a stroke. It was too late then, and he nearly drowned before help could reach him.

Major Evans was in excellent spirits as I have said and was soon explaining all about his squadron and some of the difficulties which they had encountered.

"But why is there a Marine Aviation Detachment in China?" I asked.

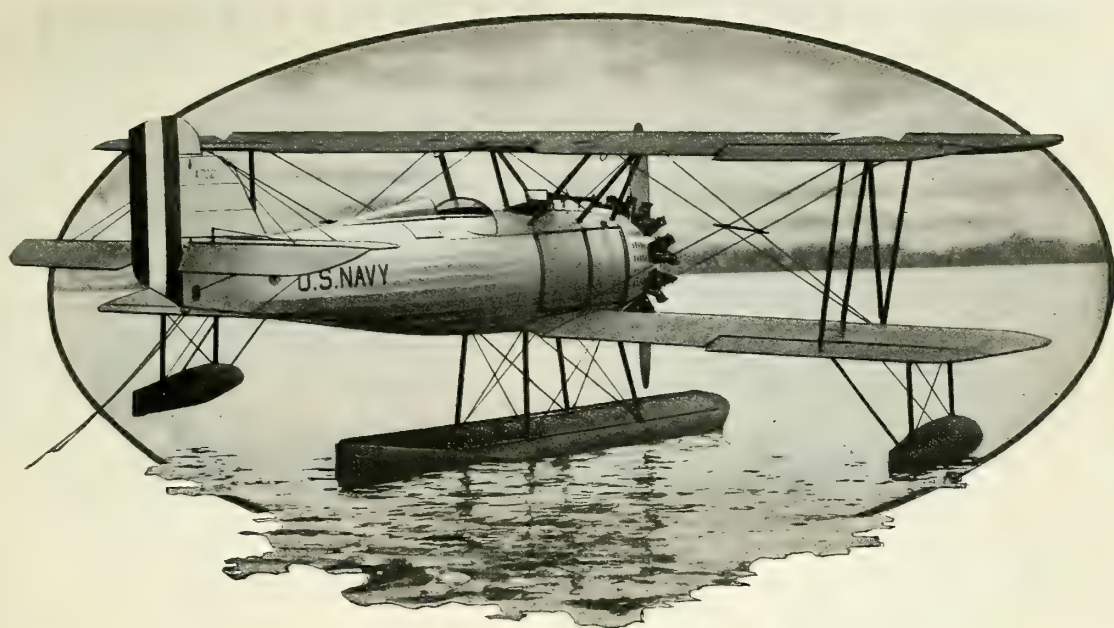
Before I had a chance to enlarge my question, his bright eyes flashed and he replied, "We are here to protect American lives."

I groaned.

"Yes! Yes!" I continued. "I have heard about that before. But how are you going to protect American lives with airplanes?"

"The planes would be employed for attack purposes in case of necessity, and if a hostile force attacked our legation, we would dive upon them and with our machine gun fire and fragmentation bombs, we could dispense an entire army."

(Continued on page 446)



Four World's Records

For the new Vought "CORSAIR"

ALTITUDE

A STANDARD Vought "Corsair" Naval Seaplane, on April 14, 1927, reached a record altitude of 22,178 feet, carrying a ballast load of 1102 pounds, included in the total useful load of 1640 pounds.

Lieut. George R. Henderson, U. S. N., Pilot.

SPEED — 100 KILOMETERS

THE SAME SEAPLANE, on April 25, 1927, with the same ballast load included in the 1675 pounds useful load, averaged 147.263 miles per hour for 100 kilometers around a 25 kilometer closed course.

Lieut. Steven W. Callaway, U. S. N., Pilot.

SPEED — 500 KILOMETERS

ON APRIL 30, 1927, the same "Corsair" Seaplane, flying around the same short 25 kilometer course, averaged 136.023 miles per hour for 500 kilometers, carrying 1880 pounds useful load including 1102 pounds ballast.

Lieut. James D. Barner, U. S. N., Pilot.

SPEED — 1000 KILOMETERS

AND STILL a fourth World's Record was made by the same "Corsair" Seaplane on May 21, 1927, when an average speed of 130.93 miles per hour for 1000 kilometers was made over the same short course.

Lieut. Rutledge Irvine, U. S. N., Pilot.

THE VOUGHT "CORSAIR" IS NOW IN PRODUCTION AND DELIVERIES WILL SHORTLY BE MADE TO THE NAVAL AIR SERVICE FOR UO REPLACEMENT

CHANCE VOUGHT CORPORATION
LONG ISLAND CITY, NEW YORK

ARMY AND NAVY AIR SERVICE ORDERS

ARMY AIR CORPS ORDERS

THE following Army Air Corps orders have been issued as of the dates indicated in brackets:

Albery, 2d Lt. Freeman, Reserve, report to Bolling Field, D. C., for training. (Aug. 24)
 Albro, 1st Lt. Ames S., to San Antonio Air Depot, Tex., to take effect on completion of tour of foreign service. (Sept. 15)
 Arnold, 2d Lt. Frederick Grey, Reserve, Seattle, Wash., to active duty; report to 1st Lt. Thomas K. Matthews, Boeing Airplane Co., Seattle, Wash., for training. (Aug. 25)
 Ashton, 2d Lt. Francis Edward, Reserve, to active duty for training with procurement planning representative, Chicago, Ill. (Sept. 2)
 Austin, 2d Lt. John Adams, Reserve, to active duty at Mitchell Field, L. I. (Sept. 12)
 Bailey, 1st Lt. George W., jr., 2nd Division, Ft. Sam Houston, Tex., to Cavalry School, Ft. Riley, Kans. (Aug. 23)
 Barber, 1st Lt. Frank Herbert, Reserve, report to Crissy Field, Presidio of San Francisco, Calif., for training. (Sept. 7)
 Barnett, 2d Lt. Roland Clifton, Reserve, to active duty for training at Bolling Field, Anacostia, D. C. (Sept. 2)
 Bennett, 2d Lt. Clarence W., to 8th Cavalry, Ft. Bliss, Tex. (Aug. 25)
 Bowen, 2d Lt. Lewis Love, resignation accepted. (Sept. 14)
 Briney, 1st Lt. Wilton Moore, Reserve, to active duty on Oct. 1st. (Sept. 14)
 Brock, Capt. Arthur W., jr., leave of absence 1 month, 15 days. (Sept. 16)
 Broughton, Capt. John Jerry, Reserve, to active duty for training, U. S. Spruce Production Corp., Portland, Ore. (Sept. 6)
 Carneal, 2d Lt. Charles Wendell, Reserve, to active duty at Langley Field, Hampton, Va., for duty with a tactical unit. (Sept. 9)
 Carroll, 1st Lt. James B., detailed as instructor, Calif. Nat'l Guard. (Sept. 17)
 Christian, Capt. Robert L., Inf., from University of So. Calif., detailed in Air Corps. (Sept. 19)
 Clark, Capt. Ernest, Chanute Field, to Langley Field, Va. (Sept. 14)
 Clarke, 1st Lt. Joseph Givens, Reserve, to active duty for training at Wright Field, Dayton, O. (Aug. 19)
 Cobb, 2d Lt. Richard E., order directing him to proceed to Langley Field, Va., revoked. (Sept. 8)
 Cole, Capt. Ross F., Kelly Field, Tex., to duty as student in Infantry School, Ft. Benning, Ga. (Aug. 19)
 Connelly, Capt. Louis Stoker, Reserve, Dayton, O., to active duty at Wright Field, Dayton, O. (Sept. 13)
 Corrigan, Capt. Robert W., Ft. Sam Houston, Tex., to Infantry at Fort D. A. Russell, Wyo. (Sept. 13)
 Coyle, 2d Lt. Orie William, Reserve, report to Crissy Field, Presidio of San Francisco, Calif., for training. (Sept. 7)
 Crom, Capt. William H., Bolling Field, D. C., to duty with industrial war plans office, Dayton, O. (Sept. 8)
 Cusston, 2d Lt. Nathaniel C., jr., relieved from detail in Air Corps, assigned to Field Artillery, 2d Division, Ft. Sam Houston, Tex. (Aug. 24)
 Dawson, 2d Lt. Leo H., promoted to 1st Lt. (Sept. 9)
 Dickinson, Capt. Raymond Starbuck, Reserve, to active duty for training at Rockwell Field, Calif. (Aug. 19)
 Drake, 2d Lt. Thomas D., Inf., detailed in Air Corps from Ft. Thomas, Ky., to Brooks Field, Tex. (Sept. 19)
 Duffy, 2d Lt. Martin William, Reserve, to active duty for training with procurement planning representative, Chicago, Ill. (Sept. 2)
 Eaker, Capt. Ira, from office Chief of Air Corps to office Asst. Secretary of War, place on detached officers list. (Sept. 17)
 Eielson, 1st Lt. Carl Benjamin, Reserve, relieved from duty at Langley Field, Va., and placed on inactive status. (Sept. 14)
 Ennis, 1st Lt. Arthur I., Chanute Field, Ill., to duty in office of Chief of Air Corps. (Sept. 14)
 Estabrook, 1st Lt. Merrick G., jr., to duty at Wright Field, O., upon completion of present tour of foreign service. (Aug. 24)
 Funston, 2d Lt. Frederick, jr., from duty in Air Corps, to 30th Infantry, Presidio of San Francisco, Calif. (Aug. 27)
 Jaalaas, Capt. Rudolph Leonard, Reserve, to active duty for training at Chanute Field, Ill. (Sept. 7)
 Gaenslen, Capt. George Ralph, Reserve, to active duty, San Antonio Air Depot, Tex. (Sept. 2)
 Gaffney, 1st Lt. Dale V., to duty at Kelly Field, Tex., to take effect upon completion of present tour of foreign service. (Aug. 31)
 Grant, 2d Lt. Charles Hampson, Reserve, to active duty for training with procurement planning representative, N. Y. (Sept. 2)
 Hale, Capt. Avinio H., Langley Field, Va., to the commandant, Tactical School, Langley Field, Va., for duty as student. (Sept. 13)
 Harms, Maj. Henry W., detailed as member of board to standardize forms of war contracts. (Sept. 1)
 Herman, 1st Lt. Fred Weld, Reserve, report to Chief of Air Corps for training. (Sept. 2)
 Hill, Capt. Edmund W., from duty as student at Brooks Field to duty as student in special ob-

servations course, Advanced Flying School, Kelly Field, Tex. (Sept. 8)
 Hogg, 1st Lt. Earl S., from office of Chief of Air Corps to duty at Mitchell Field, L. I., N. Y. (Aug. 31)
 Johnston, Capt. Douglas, Scott Field, Ill., to Ft. Monroe, Va. (Aug. 26)
 Johnston, 2d Lt. Gerald G., from assignment as student at Kelly Field, Tex., to commandant Advanced Flying School for duty. (Sept. 8)
 Johnston, 2d Lt. Robert Dilger, Reserve, to active duty for training at Ft. Crockett, Tex. (Sept. 2)
 Kearney, Maj. Raymond Warren, Reserve, to active duty for training with procurement planning representative, San Francisco, Calif. (Sept. 2)
 Kepner, Capt. Wm. E., in addition to present duties at Scott Field, Ill., designated as assistant commandant of Balloon and Airship School, same post. (Aug. 28)
 Larned, Maj. John Hawley, Reserve, to active duty for training at Langley Field, Va. (Sept. 2)
 Larson, 1st Lt. Westside T., to duty at Kelly Field, Tex., upon completion of present tour of foreign service. (Aug. 31)
 Lee, 2d Lt. Walter S., Inf., detailed in Air Corps from assignment to 11th Inf. and duty at Ft. Benj. Harrison, Ind., to Primary School, Brooks Field, Tex. (Sept. 19)
 Lindsay, Maj. David Breed, Reserve, to active duty for training at Langley Field, Va. (Sept. 2)
 Longenecker, 1st Lt. Ernst Abraham, Reserve, to active duty for training, reporting to procurement planning representative, Buffalo, N. Y. (Sept. 2)
 Lyons, 2d Lt. Paul Morris, Reserve, report to Wright Field, Dayton, O., for training. (Aug. 22)
 McClelland, Capt. Harold M., relieved from assignment at Mitchell Field, L. I., N. Y., ordered to duty in office of Chief of Air Corps. (Aug. 22)
 McCullough, 1st Lt. Roger S., promoted to Capt. (Sept. 9)
 McEnery, 1st Lt. William L., Cav., detailed in Air Corps from Ft. Bliss to Brooks Field, Tex. (Sept. 19)
 McIntosh, Maj. Lawrence W., relieved from board to standardize forms of war contracts. (Sept. 1)
 MacShort, 1st Lt. Reserve, to active duty for training at Wright Field, Dayton, O. (Sept. 7)
 Meredith, Capt. Russell L., Hawaiian Dept., to the U. S. and his home to await retirement. (Aug. 28)
 Mosley, Capt. Harry, Reserve, report to Chief of Air Corps for training. (Sept. 2)
 Munchhof, 2d Lt. Theodore Joseph, Reserve, report to Crissy Field, Presidio of San Francisco, Calif., for training. (Sept. 7)
 Munger, 2d Lt. Lester, Reserve, to active duty on Oct. 1st. (Sept. 14)
 Murphy, Capt. Robert E. Lee, Reserve, report to Chief of Air Corps for training. (Sept. 2)
 Murray, 2d Lt. Basil Duval, Reserve, to active duty for training at Langley Field, Va. (Sept. 7)
 Neubauer, Maj. Charles Martin, Reserve, report to Chief of Air Corps for training. (Sept. 2)
 Norris, 1st Lt. Howard Dutton, Reserve, to active duty at Maxwell Field, Montgomery, Ala. (Sept. 10)
 Parker, Maj. Victor Clark, Reserve, to active duty for training at Fairfield Air Depot, Ohio. (Sept. 2)
 Perkins, 1st Lt. John Macklen, Reserve, to active duty for training at Langley Field, Va. (Sept. 2)
 Phillips, Capt. George Gregory, Specialist Reserve, to active duty for training at Fairfield Air Depot, Fairfield, O. (Sept. 2)
 Pierce, Capt. Roscoe Cook, to active duty for training at Rockwell Air Depot, Coronado, Calif. (Sept. 2)
 Pietrzak, Capt. Kasmer Theodore, to active duty for training at Rockwell Air Depot, Coronado, Calif. (Sept. 2)
 Reed, 1st Lt. Walter J., promoted to Capt. (Sept. 2)
 Reiter, 1st Lt. John F., Fairfield air internment depot, Fairfield, O., to chief of material division, McCook Field, Dayton, O. (Aug. 22)
 Royer, 2d Lt. David Amos, Reserve, to active duty for training at Langley Field, Va. (Sept. 7)
 Showalter, 2d Lt. Victor Emmanuel, Reserve, to active duty for training at Scott Field, Ill. (Sept. 2)
 Sigourney, Capt. Harry Cornish, Reserve, to active duty for training at March Field, Riverside, Calif. (Aug. 26)
 Smith, 2d Lt. Arthur LaSalle, Reserve, to active duty for training at Crissy Field, San Francisco, Calif. (Aug. 26), promoted to 1st Lt. (Sept. 9)
 Stone, Capt. Lawrence F., Langley Field, Va., to Tactical School, same post. (Sept. 1)
 Stoner, 1st Lt. Rex K., Kelly Field, Tex., to Selfridge Field, Mich. (Aug. 19)
 Streett, 1st Lt. St. Clair, promoted to Capt. (Sept. 9)
 Stuart, Capt. Geary John, Reserve, to active duty for training at Portland, Ore. (Sept. 8)
 Sutton, 1st Lt. Harry A., Wright Field, O., to 466th Headquarters Squadron, Fifth Corps Area, (Aug. 25)
 Von Hartzen, Maj. Anthony Earl, to active duty for training at Rockwell Air Depot, Coronado, Calif. (Sept. 2)
 Weddington, 1st Lt. Harry, Ft. Sam Houston, Tex., to duty with 366th Observation Squadron, Dallas, Tex. (Aug. 19)
 Wheeler, Capt. Chilton F., now on duty in Washington, D. C., report to Director of Army Industrial College, D. C., for temporary duty as student. (Aug. 19)
 White, 2d Lt. Will W., San Antonio, Tex., to

duty at U. S. Military Academy. (Aug. 28)
 Williams, 1st Lt. Wm. Carlton, jr., to active duty at Ft. Sam Houston, Tex., for training with tactical unit. (Sept. 7)
 Wimsatt, 1st Lt. Robert W. C., to Aberdeen Proving Ground, Md., to take effect on completion of tour of foreign service. (Sept. 15)
 Wright, Capt. Frank W., now on duty in Washington, D. C., report to Director of Army Industrial College, D. C., for temporary duty as student. (Aug. 19)
 Zimmer, 2d Lt. Elmer Edward, Reserve, report to procurement representative, Buffalo, N. Y., for training. (Sept. 2)

NAVY AIR SERVICE ORDERS

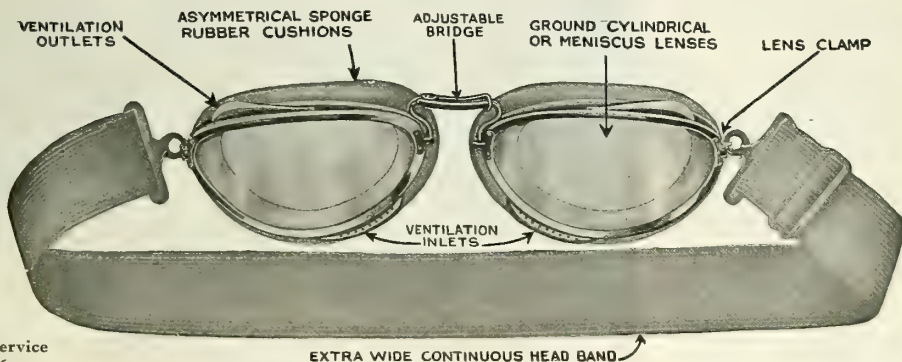
THE following Navy air orders have been issued as of the dates indicated in brackets:

Adams, Lt. (j.g.) John Q. (M.C.), det. N. A. S., Hampton Roads, Va.; to VT Sqn. 1S, Aircraft Sqdns., Scgt. Flt. (Sept. 2)
 Austin, Ens. Clanton E., det. N. A. S., Pensacola, Fla.; to U. S. S. Eagle 35. (Sept. 6)
 Batchelder, Lt. Robert F. (S. C.), det. Navy Yard, Boston, Mass.; to c.f.o. U. S. S. Lexington. (Sept. 10)
 Bernhard, Comdr. Alva D., det. N. A. S., Pensacola, Fla.; to c.f.o. U. S. S. Lexington. (Aug. 27)
 Black, Lt. (j.g.) Robert E., det. VT Sqn. 1S, Aircraft Sqdns., Scgt. Flt.; to VF Sqn. 6S, Aircraft Sqdns., Scgt. Flt. (Aug. 29)
 Boothe, Lt. (j.g.) Eaton A., det. U. S. S. Medusa, to Aircraft Sqdns., Battle Flt. (Sept. 10)
 Butler, Capt. Henry V., det. c.f.o. U. S. S. Saratoga; to General Board, Navy Dept. (Sept. 17)
 Caldwell, Ens. Rex S., det. N. A. S., Pensacola, Fla.; to U. S. S. Sapelo. (Sept. 2)
 Carrington, Ens. James H., det. N. A. S., Pensacola, Fla.; to c.f.o. U. S. S. Saratoga. (Aug. 29)
 Carter, Comdr. Worral R., det. N. A. S., Pensacola, Fla.; to command U. S. S. Osborn. (Sept. 7)
 Carlson, Ens. John A., det. N. A. S., Pensacola, Fla.; to U. S. S. Camden. (Sept. 2)
 Dana, Lt. (j.g.) Winfred P. (M.C.), det. VT Sqn. 1S, Aircraft Sqdns., Scgt. Flt.; to N. A. S., Hampton Roads, Va. (Sept. 2)
 Davis, Ens. Richard, jr., det. N. A. S., Pensacola, Fla.; to c.f.o. U. S. S. Lexington. (Aug. 29)
 Doyle, Capt. Stafford H. R., det. command N. A. S., San Diego, Calif.; to command U. S. S. Trenton. (Aug. 27)
 Ford, Lt. Joseph E. (S.C.), det. VS Sqn. 1S; to VT Sqn. 9S, Aircraft Sqdns., Scgt. Flt. (Sept. 8)
 Gillen, Lt. John F., orders Aug. 2 modified; to duty VT Sqn. 9S, Aircraft Sqdns., Scgt. Flt. (Sept. 17)
 Ginder, Lt. Comdr. Samuel P., det. N. A. S., Nav. Oper. Base, Hampton Roads, Va., to c.f.o. U. S. S. Saratoga. (Aug. 27)
 Hede, Ens. Adolph, orders Aug. 24 to c.f.o. U. S. S. Saratoga revoked; to temp. duty Navy Academy. (Sept. 17)
 Hoffman, Ens. Carleton C., det. N. A. S., Pensacola, Fla.; to U. S. S. Humphrey. (Aug. 29)
 Humphrey, Lt. Harold E. (S.C.), det. N. A. S., Nav. Oper. Base, Hampton Roads, Va.; to Nav. Hosp., Norfolk, Va. (Aug. 25)
 Hundt, Lt. Lester T., det. VO Sqn 5S (U. S. S. Nevada) Aircraft Sqdns., Scgt. Flt.; to VT Sqn. 9S. (Sept. 18)
 Janssen, Lt. Jesse G., orders Aug. 2 modified; to duty VT Sqn. 9S, Aircraft Sqdns., Scgt. Flt. (Sept. 17)
 Karpe, Ens. Eugene S., det. U. S. S. Camden; to c.f.o. U. S. S. Lexington. (Sept. 8)
 Kieffer, Lt. Comdr. Henry M., det. N. A. S., Pensacola, Fla.; to U. S. S. Texas. (Sept. 2)
 Kirkland, Ens. Thomas J., jr., det. VO Sqn. 6S, (U. S. S. Oklahoma); to VO Sqn. 5S, Aircraft Sqds., Scgt. Flt. (Sept. 7)
 Lee, Ens. Fitzhugh, 2d orders July 23 modified; to c.f.o. U. S. S. Lexington. (Sept. 7)
 Lindsey, Ens. Eugene E., det. Naval Academy; to c.f.o. U. S. S. Lexington. (Sept. 10)
 Lyon, Lt. John B., orders Aug. 2 modified; to duty VT Sqn. 9S, Aircraft Sqdns., Scgt. Flt. (Sept. 17)
 McCrary, Capt. Frank R., det. Air Sqn. 5S, Battle Flt.; to N. A. S., San Diego, Calif. (Aug. 27)
 McDade, Lt. William M., det. Aircraft Sqdns., Battle Flt.; to aide and flag lieutenant on staff, Aircraft Sqdns., Battle Flt. (Aug. 23)
 McKay, Lt. Archie B. (S.C.), det. Nav. Air Sta., Pensacola, Fla.; to U. S. S. Camden. (Aug. 23)
 Morgan, Ens. John G., det. N. A. S., Pensacola, Fla.; to c.f.o. U. S. S. Lexington. (Aug. 29)
 Mumma, Ens. Albert G., det. Navy Rifle Team, Capt. Perry, O.; to c.f.o. U. S. S. Saratoga. (Sept. 8)
 Murdock, Lt. George G. (Ch. C.), det. Marine Bks. Quantico, Va.; to c.f.o. U. S. S. Lexington. (Sept. 10)
 Montgomery, Comdr. Alfred E., to duty as executive officer, N. A. S., San Diego. (Sept. 2)
 Nash, Lt. (j.g.) Alan R., det. VO Sqn. 5S; to VF Sqn. 6S, Aircraft Sqdns., Scgt. Flt. (Aug. 29)
 Nicol, Ens. Bromfield B., orders Aug. 2 modified; to VT Sqn. 9S, Aircraft Sqdns., Scgt. Flt. (Sept. 17)

(Continued on page 446)

MEYROWITZ LUXOR GOGGLES

The original and genuine
precision Aviation Goggles



U. S. Air Service
Model 6

MEYROWITZ LUXOR GOGGLES No. 6

U. S. Air Service
Model

With ground polished
and cylindrical bent
white lenses \$10.75
With ground polished
and cylindrical bent
Amber or Euphos
(green) tinted lenses. 12.75
With hand ground Me-
niscus white lenses... 15.00
With hand ground Me-
niscus or Euphos (green)
tinted lenses... per pair 16.50

MADE as carefully and scientifically as a pair of binoculars or a microscope — that's why Luxor Goggles are the standard in Aviation and are used exclusively by most of our well-known aviators.

Wider vision — lenses of optical precision. Comfortable sponge rubber cushions that fit your face and prevent air seepage. Perfect ventilation *through the frame-work* — non-fogging and non-sweating. Adjustable bridge. A better and more dependable goggle has not been made.

Sold by leading opticians, sporting goods stores and air-craft dealers. Write for descriptive circular. Be sure you get the genuine Luxor Goggles.

LUXOR GOGGLES No. 5

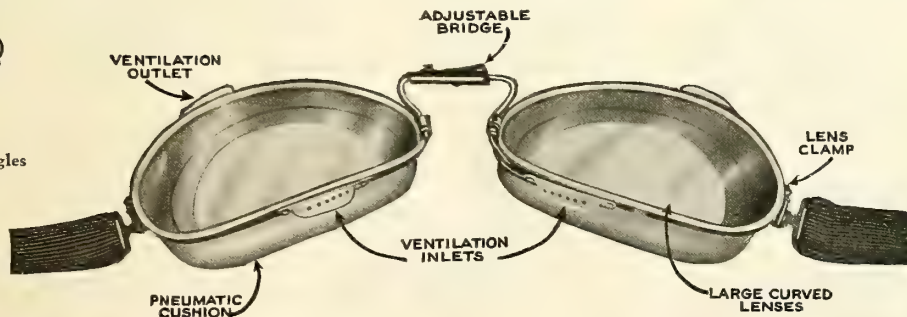
Luxor Goggles No. 5
with first quality
white lenses \$6.75
Luxor Goggles No. 5
with first quality
tinted Amber or
Euphos (green)
per pair \$7.50

LUXOR GOGGLES No. 6

Luxor Goggles No. 6
with first quality
white lenses \$9.75
Luxor Goggles No. 6
with first quality
tinted Amber or
Euphos (green)..... 10.50
Luxor Goggles No. 6
with hand ground Me-
niscus white lenses... 15.00
Luxor Goggles No. 6
with hand ground Me-
niscus tinted Amber
or Euphos (green)...
per pair 16.50



Luxor Goggles
Model 5



In the National Air Derby and Races at
Spokane — Luxor Goggles Prevailed.

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DETROIT
ST. PAUL
MINNEAPOLIS

Dept. A — 520 Fifth Avenue at 43rd Street, New York

(Continued from page 442)

"What kind of planes will you use?" I asked, becoming interested at once.

"That's the trouble," he continued. "There is no plane made to-day that meets our requirements. We want a light, fast ship built around a 200 horsepower air-cooled motor. The plane must carry a complete armament, have a cruising radius of several hundred miles, and above all, be able to get in and out of small fields."

"And what do we have—," he added. "Six O2B1's (those are the old DH observation planes with steel fuselages), six OL6's (Loening Amphibians), and six FBL's (Boeing pursuit planes). Now here in China we are forced to use small emergency fields. Just try to get one of those observation planes or the Loenings down into a small field and then out again. It can't be done, that's all! We depend upon the Boeing pursuit jobs for most of our work."

"Will you be here long?" I asked, addressing my remarks to Colonel Turner, for I knew that the Major is leaving on the first boat back to the U. S. A.

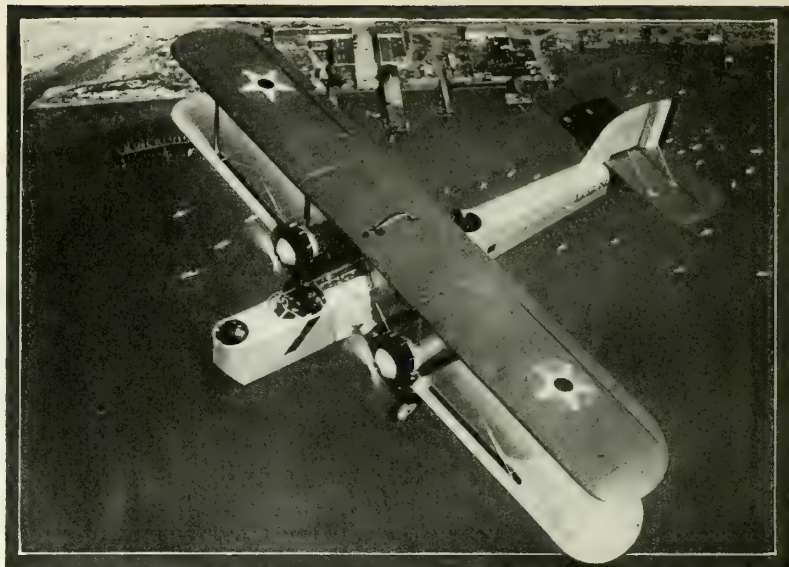
"That's hard to say," replied the Colonel. "We may be here a month and we may be here two years. I'm not worrying about that though. When you are in the Marine Corps, any place you pitch your tent is home, whether it is Nicaragua or Cavite or even here."

Just then "Nutsy" Moore stuck his head in the tent to announce in a pleasant southern drawl reminiscent of South Carolina, that "You all better come over for tea."

The "tea" was served out of bottles and a good time was enjoyed by all—except the Chinese waiter who was told that his queue would be cut off if he didn't rustle up some more "tea" chop! chop! It was not long before more bottles of tea were found and so the Chinaman saved his scalp lock.

After tea, Captain Moore very kindly offered to fly me back to Tientsin. An invitation which was readily accepted you may be sure.

We climbed into one of the O2B1 (observation planes), and after bidding everybody farewell, we were soon speeding across the small field. "Nutsy" pulled back on the joy stick and we were up in the air. Imagine flying in China! Transportation here has remained practically the same for a thousand years, and here we were awaking the shades of departed Mandarins and Manchus with the roar of our Liberty motor. Flying in this part of China is quite an event for only the United States Marine Corps has permission from the Chinese government to fly. All other machines would be quickly fired upon, and even the United States Navy planes aboard the battleships at Cheefoo not far from here do not dare come up to Tientsin. There I was—flying over historic old China—still in the throes of a 'Civil War. A strange thrill of exhilaration swept up and down my back as I looked down and saw the clumsy old Chinese junks slowly plodding their way up the winding river while we—on the wings of the air—were setting a straight course at a hundred miles an hour for Tientsin.



Underwood and Underwood

The new Navy Douglas torpedo and bombing plane on a test flight

For miles and miles the country stretched out in a great salt marsh around us only broken in its monotony by small villages of mud huts huddled together in the swampy wastes. But as we approached the city, the land became more fertile, and large well-kept farms appeared everywhere. Way up across the plains I could see the smoke from the factories around Peking, while to the west were hills enshrouded in a beautiful purple haze.

Tientsin was below us before I realized it. Its busy factories belching forth smoke while its foreign quarter looked very neat and clean. I hardly realized that I was in a fighting plane sent 4,000 miles across the broad Pacific to protect American lives. All looked so orderly and peaceful.

But when I looked again and saw the small field we had to land in, I hoped that our plane would at least protect one American life. The field was a vacant lot, right in the heart of the city, and if we had rolled fifty feet farther, we would have gone right through somebody's store. Believe me, I was glad our plane stopped when it did.

I turned to Captain Moore to thank him for his kindness in flying me back to Tientsin and added that if I had known what a risk he took in landing in such a field, I would have spared him the flight.

"Oh, this is nothing," he replied. "We fly the mail up here every day, and I have flown Ambassador MacMurray and General Smedley Butler from here, too. It's all in the day's work."

That is always the way it is with a Marine. There is never a job too difficult for him. First to fight, and the last to give up a battle, the United States Marine Corps has established an enviable reputation "from the halls of Montezuma to the shores of Tripoli," if I may quote from their marching song. As I was being wheeled back to my hotel in a ricksha I almost regretted that I was no longer under the proud banner of *Semper Fidelis*.

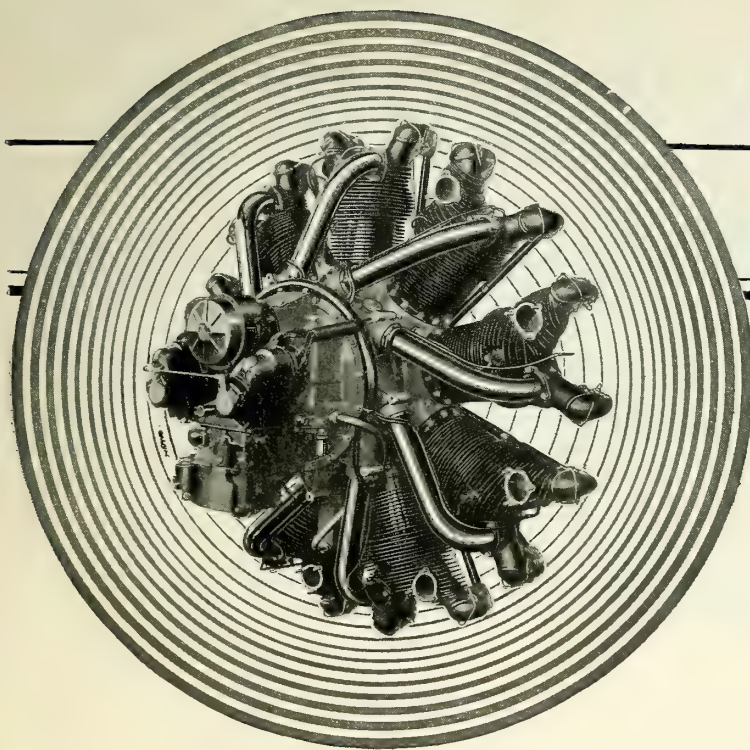
NAVY AIR SERVICE ORDERS

(Continued from page 444)

Noble, Lt. Julian B., duty involving flying, 1st Nav. Dis. (Sept. 2)
O'Connor, Lt. Cornelius P., det. VJ Sqdn. 1B, Aircraft Sqdns., Battle Flt.; to U. S. S. *Medusa*. (Sept. 10)
Sease, Lt. Hugh St. C., orders Aug. 2 modified; to duty VT Sqdn., Aircraft Sqdns., Scgt. Flt. (Sept. 17)
Short, Lt. Giles E., orders Aug. 2 modified; to VT Sqdn. 9S, Aircraft Sqdns., Scgt. Flt. (Sept. 17)
Shown, Lt. Wilbur V., det. Office Insp. of Nav. Aircraft, Boeing Airplane Co., Seattle, Wash.; to command U. S. S. 3-45 (Aug. 23)
Smith, Ens. James M., det. N. A. S., Pensacola, Fla.; to U. S. S. *Bushnell*. (Sept. 2)
Sullivan, Ens. Cornelius M., det. N. A. S., Pensacola, Fla.; to c.f.o. U. S. S. *Lexington*. (Aug. 29)
Taylor, Ens. Joseph I., jr., det. VO Sqdn. 5S (U. S. S. *Nevada*); to VO Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Sept. 2)
Townsend, Lt. Guy D., det. VT Sqdn. 3S; to VT Sqdn. 9S, Aircraft Sqdns., Scgt. Flt. (Sept. 17)
Washburn, Lt. (j.g.) George A. T., det. VO Sqdn. 3S (U. S. S. *Trenton*); to VF Sqdn. 3S, Aircraft Sqdns., Scgt. Flt. (Aug. 29)
West, Ens. Marvin J., det. N. A. S., Pensacola, Fla.; to U. S. S. *Mauzy*. (Sept. 2)
Yarnell, Capt. Harry E., det. N. A. S., Pensacola, Fla.; to command U. S. S. *Saratoga* when commissioned. (Sept. 6)
Young, Lt. (j.g.) Clifton A., (M.C.), det. VS Sqdn. 1S; to VF Sqdn. 5S, Aircraft Sqdns., Scgt. Flt. Orders Aug. 25 to VF Sqdn. 1S cancelled. (Sept. 7)

MARINE CORPS AIR ORDERS

THE following Marine Corps air orders have been issued as of the dates indicated in brackets.
Britt, 2d Lt. G. M., det. N. A. S., Pensacola, Fla.; to N. A. S., San Diego, Calif. Authorized delay one month en route. (Aug. 18)
Byrd, Capt. W. C., det. N. A. S., Pensacola, Fla.; to A. S., E. C. E. F., M. B., Quantico, Va. (Aug. 18)
Conway, 2d Lt. W. W., detached N. A. S., Pensacola, Fla.; to A. S., E. C. E. F., M. B., Quantico, Va. Authorized delay one month en route. (Aug. 18)
Dewine, 2d Lt. L. R., det. N. A. S., Pensacola, Fla.; to N. A. S., San Diego, Calif. Authorized delay one month and 10 days en route. (Aug. 18)
Farrell, 1st Lt. W. G., on or about Oct. 10 det. M. B., Quantico, Va.; to N. A. S., San Diego, Calif. (Aug. 31)
Howard, Capt. E. D., det. N. A. S., Pensacola, Fla.; to A. S., E. C. E. F., M. B., Quantico, Va. (Aug. 18)
McCaughy, Capt. W. E., relieved from spec. temp. aviation duty with 2nd Brigade, China and det. N. A. S., San Diego, Calif.; to N. A. S., E. C. E. F., Quantico, Va. (Sept. 7)
Millard, 2d Lt. T. B., det. N. A. S., Pensacola, Fla.; to A. S., E. C. E. F., Quantico, Va. Authorized delay one month en route. (Aug. 18)
Willis, 2d Lt. D. G., det. N. A. S., Pensacola, Fla.; to M. C. B., N. O. B., San Diego, Calif. Authorized delay enroute until Sept. 9. (Aug. 18)



Wasp & Hornet **Leadership**

One piece Master Connecting Rod and Built-up Crankshaft.



Divided and Forged Aluminum Main Crankcase.



Grouping of all accessories at the rear of the engine.



Complete enclosure of all working parts.

Grouping of all Accessories at the rear of the Engine

Pratt & Whitney engines pioneered with provision for all accessories in one unit, and completely protected by the cowling. Accessibility is excellent, and engine installation and maintenance have been greatly simplified.

In this basic feature the "Wasp" and "Hornet" have materially influenced all modern air cooled engine design.

The Wasp

425 H.P.
at 1900 R.P.M.
Weight 650 lbs.

The Hornet

525 H.P.
at 1900 R.P.M.
Weight 750 lbs.

THE
PRATT & WHITNEY AIRCRAFT CO.
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DEPENDABLE ENGINES



SAFETY



JACK FRYE, president of the Aero Corporation of California writes: "We believe that the B. G. Hornet Spark Plug for the Wright Whirlwind motor is the most efficient and dependable on the market and take great pleasure in recommending it."

Operators of commercial aircraft know that B. G. Spark Plugs are not only the safest in flying but also the cheapest in service cost.

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TELEGRAPH

LOS ANGELES

August 18, 1927

The B. G. Corporation,
136 West 52nd Street,
New York City, N. Y.

Attention: Geo. M. Paulson, Chief Engineer

Gentlemen:

On our recently completed transcontinental flight from New York to Los Angeles in a Fokker Universal, the Wright Whirlwind J-5 engine was equipped with B. G. Hornet spark plugs and we wish to take this opportunity to congratulate your company on the quality of this dependable and efficient plug. Throughout the long trip the engine fired perfectly and we experienced none of the ignition troubles due to faulty or fouled plugs usually met with on a trip of this nature.

Our flying time for this trip, including demonstration trips and some barn storming, was 41 hours -- 22 minutes and the greater part of the flight was in the face of head winds of considerable velocity. The aggregate weight of the load carried, consisting of two passengers with luggage, considerable merchandise, pilot and fuel amounted to approximately 1400 pounds.

During the flight we encountered temperatures ranging from 40 to 110 degrees and flew at altitudes ranging from sea level to 11,500 feet through all manner of atmospheric conditions, from fog and rain to the extreme arid heat of the Arizona desert.

Through these unusual and extreme conditions, the B. G. Hornet plugs functioned perfectly and we were particularly pleased with their performance in the desert country where they eliminated all pre-ignition troubles so often a source of grief when flying through intense heat.

Since the Fokker's arrival here it has made a trip to San Francisco and back and is now in general commercial service on our field. Over fifty more hours have been added to the engine time and though they have not once been removed, the B. G. Hornet plugs are still giving perfect service.

We believe that the B. G. Hornet spark plug, for the Wright Whirlwind J-5 motor is the most efficient and dependable on the market and take great pleasure in recommending it.

Yours very truly,
THE AERO CORPORATION OF CALIFORNIA

(Signed) Jack Frye

JF VD

President

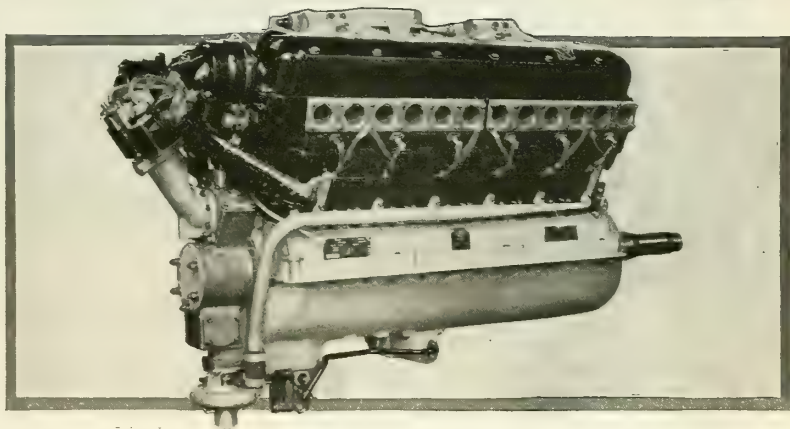
THE B. G. CORPORATION

Contractors to the U. S. Government Air Services and to the Aircraft Engine Builders

FIRST!



THE following telegram has been received from Arthur Nutt, Engineer of the Curtiss Aeroplane and Motor Company, Inc.—“B. G. spark plugs again assisted perfectly in helping to win first and second places in the Pursuit and Observation Airplane Races at Spokane, using the V 1550 type Curtiss Engine in our Hawk and Falcon Airplanes.”

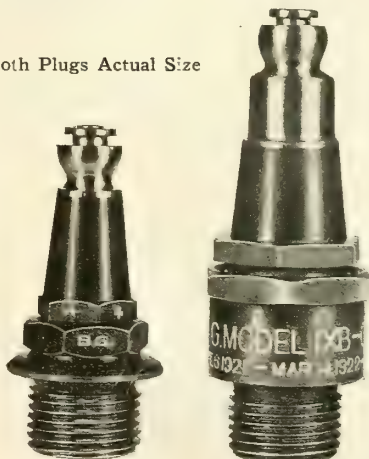


Lieutenant Art. C. Goebel, the winner in the North America-Hawaii Race used B. G. MICA spark plugs.

Of the 12 planes which completed the flight in the Ford Reliability Tour, B. G. HORNET spark plugs were used in 10 planes, (9 Whirlwind and 1 Curtiss C-6 engines).

The first 9 winners used B. G. HORNET spark plugs. During the course of the Tour, several flyers replaced their porcelain spark plugs with B. G. HORNETS.

Both Plugs Actual Size



B. G. Hornet

Usual Size

136 W. 52d St., New York City

THE AERONAUTICAL INDUSTRY

RE OCEAN FLYING

AT a dinner given by the Detroit Aviation Society on September 8th, at Chateau Voyageurs Clubhouse, Grosse Ile, attended by the balloon pilots participating in the Gordon Bennett International Balloon Race, the following resolution was unanimously adopted: "It is declared to be the unanimous consensus of opinion of the Detroit Aviation Society and of the thirty-two pilots participating in the Gordon Bennett International Balloon Race and representing the following nations: Belgium, England, France, Germany, Italy, Spain, Switzerland and the United States, that

1. The recent loss of human life in connection with attempts at transoceanic flight in airplanes is deeply regretted and sincere sympathy is extended to the bereaved relatives.

2. Future flights of this nature should be limited to dirigible airships or to large flying boats possessing seaworthy hulls, accommodations, and supplies adequate to sustain life in the event of emergency landing.

3. No dirigible airship or flying boat should undertake transoceanic flight unless equipped with radio and supplied with a fuel reserve one-third in excess of estimated requirements.

4. Airplanes, which fundamentally are for service over land, should not attempt over-water flights except for short distances. Most certainly at the present time airplanes are not suitable, nor are they adaptable to transoceanic commercial service.

5. The conquest of the ocean commercially is a problem that must be solved by the dirigible airship and by the large flying boat. The development of these two types of aircraft, therefore, is of prime importance and enterprises of this nature based on sound engineering deserve hearty encouragement."

TIDE WATER CREATES AVIATION DIVISION

FURTHER evidence of the interest which oil companies are taking in the development of aviation is furnished by the announcement that Tide Water has recently created a new sales division to organize and develop its aviation business.

Mr. W. C. Gittinger, manager of sales development and advertising, has been selected to head up this new division. R. W. Fulton, formerly chief automotive engineer, has been made assistant manager of the new division. Mr. Fulton is said to be an expert on aviation engines.

SWALLOW PLANE PLANT RUNNING TOP SPEED

FOLLOWING the tragic end of Captain Irwin's gallant attempt to find the lost fliers in the Honolulu Dole Derby, J. M. Moellendick, president of the Swallow Airplane Company, Wichita, who had worked day and night for six weeks helping to complete and perfect the Irwin plane, collapsed from a nervous strain and was taken to a sanitarium in Wichita. By agreement between stockholders, a friendly receiver was appointed to have full charge of the plant. Mr. Geo. R. Bassett, who is well known in Wichita as a successful business man, was appointed receiver and is now operating the plant until reorganization can be perfected.

This factory has been a pioneer in commercial aviation in the United States and for eight years has been turning out successful small biplanes.

Mr. Bassett found the plant overwhelmed with orders and has been purchasing new machinery and adding to the equipment to get these orders filled. At present he is turning out three planes a week but he plans to put on a night force within the next month and double the output.

DENNISON AIRPORT

ATHOROUGHLY equipped flying school, joy hops, air taxi, and sales and service on Kinner and Waco biplanes are among the features offered by the Dennison Aircraft Corporation at its airport which opened recently at Atlantic, a suburb of Boston. The development gives Boston its second airport, and its first privately controlled air enterprise. Harold T. Dennison, of Atlantic, is sponsor of the project, and he has surrounded himself with a capable staff.

Pilot Allan T. Bourdon, who has been flying since 1911 and has piled up a total of more than 3500 hours in the air, has charge of the flying activities at the airport. He is assisted by Franklin T. Kurt, reserve navy pilot and former president of the Tech Aero Club. Kurt is handling the ground work for students and assisting Bourdon with the air work at the present time. An interesting member of the Dennison Airport flying staff is Miss Amelia Earheart, 29 years old, who has been a licensed pilot for 10 years. She is a member of the board of directors of the corporation and her services are proving very valuable to the project. Other pilots will be added to the staff within a short time.

The airport is located at the principal crossroad on one of the most travelled boulevards south of Boston, the noted Quincy Shore Drive which flanks Quincy Bay. The hangar and office building are up to the minute. In the main building, which houses five planes, are the corporation offices. An airplane showroom, in which Kinner and Waco planes are displayed, is at the front of the building facing the boulevard.

The flying field, entirely of artificial construction, is 2200 feet long and 600-800 feet in width. It is now being enlarged 700 feet and in time it is intended to extend the runways to 3500 or 4000 feet.

On September 3rd, W. B. Kinner, president of the Kinner Airplane & Motor Corporation of Glendale, Calif., arrived at the port from California in one of his Kinner Airsters, having made the transcontinental flight in 34½ hours.

FAIRCHILD - CAMINEZ CONTEST WINNERS

THREE of the senior and post-graduate students of the Daniel Guggenheim School of Aeronautics were the winners in the Fairchild-Caminez Contest for the best design of a training airplane to be powered with the Fairchild-Caminez "Cam" engine. Frederick Jewett and Lieutenant Ivan G. Moorman jointly shared the first prize of \$150; second prize, \$100 was awarded to M. Urtis; and the third prize, \$50, to Juan A. Azcarate.



Marcellus Murdock, publisher of The Wichita Eagle greeted by his brother, Victor, editor of the Eagle, on his return to Wichita from an air tour of Europe.



Curtiss factory and flying field where hundreds of men are employed.



Weighing in Air Mail on the Western Air Express indicating the number of men needed in just this one phase of the work.

To Succeed in Aviation

You need the training this course gives you

At home, in your spare time, you can learn
the fundamentals that will prepare you for
a successful, well-paid career in Aviation

AVIATION is now a business. It is on a sound financial footing. It is the fastest growing industry in the world. There are already more aircraft factories than automobile plants. Every city and town of any size is planning or building its airport. The air-mail covers the country and is operated entirely by independent contractors. New air-mail routes are being opened as fast as they can be planned, organized and equipped.

Air-express is operating daily from coast to coast. Passengers are being carried on many lines. Taxi-service is growing by leaps and bounds. The entire country has become air-minded—Aviation is the topic of the day—the industry of the day—the biggest opportunity of today.

Trained men needed

With all this swift development, the need for trained men has become acute. Capital is ready as fast as men can be trained. Factories, airports, transport lines, flying services can only use men who know the fundamentals of Aviation. There is not time for men to acquire the training in the slow, old-fashioned method of practical hit or miss experience.



Lieut. Walter Hinton,
First trans-Atlantic
pilot of N. C. 4 fame.
President of Aviation
Institute.

What men are needed for

There are 40 non-flying jobs to every flying job in Aviation. These ground men are just as important as the pilots. Building planes, engines, equipment, hangars.

Inspectors, riggers, mechanics, instrument makers, radio operators—over 50 trades already represented. Almost every industry is supplying something to Aviation and needs trained men in that work.

Learn at home

At home, in your spare time, you can learn the fundamentals of Aviation by enrolling for the Aviation Institute Course. Lieut. Walter Hinton and his staff will guide your instruction through simple, easily understood and interesting lessons. Before you know it you will have mastered the principles that will pave the way for a successful well-paid job in Aviation.

Aviation Institute teaches you every-

thing you need to know to succeed in Aviation. All the technical groundwork is secured in a few pleasant hours at home, without interfering with your present work. If you are already in Aviation, this Course will prepare you for a better job and higher pay. Previous experience is absolutely unnecessary.

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Mail the coupon below for a copy of "Aviation—the Opportunity of Today." It describes the Aviation Industry and gives you all the facts about the Institute Course. You'll enjoy reading it. Then make up your mind about getting into Aviation.

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Lieut. Walter Hinton, President

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Send me without obligation, free copy of "Aviation—the Opportunity of Today" and full information about the Aviation Institute Home-Study Course.

Name
Street Age
City State

BOSTON AIR NEWS

By G. W. HAMBLIN, JR.

FRED E. PEREIRA, operations manager for the Bay State Flying Service, announces that the Iver-Johnson Sporting Goods house of Boston has taken over the line of American Eagle airplanes of which Pereira is New England Distributor. This is the first time, so far as can be learned, that a sporting goods store has rounded out their line of sports accessories in this manner.

Fred's Flying Service has been coming along in leaps and bounds since its inception some three months ago. Twenty students have been lined up, and last week two ships were sold to the Dreamworld Flying Service of Egypt, Mass. Adolph Backstrom, recently of the Canadian Air Service, is chief pilot. The Flying Service is associated with the Gray Line Tours, and anyone who wishes to see the points of interest around Boston from the air may do so by calling on the phone and booking a ride.

COLONIAL AIR TRANSPORT, all the boys at the airport here, the flyers at Hartford, New York and, in short, the whole flying fraternity, lost a fellow pilot, and a friend when Daniel G. Cline, "Dan" to us all, was killed while attempting to fly the mail through to New York in impossible weather. Dan was forced down at Dudley, Conn., on the way to Hartford by terrific weather on the night of September 2, the first night that the American Express was carried. Cline took off from Dudley after waiting for an hour, and, meeting the storm again, turned back to Dudley, where he put his passenger aboard a train. About 12:30 Saturday morning, the urge to carry on his job took hold of Dan again, and he started for the second time to reach Hartford. Half way to Hartford, the storm enveloped him again, and from the meagre reports we have, he flew blind for about an hour, finally sighting a beacon. As it happened, the beacon was at the foot of a hill, and Dan crashed right into the hillside.

FREDERICK LATHROP AMES, having returned from a cruise of 4,200 miles in his yacht, went to Wichita to get his plane, a Whirlwind Travel Air. Fred had her completely overhauled during the summer, and states that she never flew better. He accompanied A. O. Pabst and Murray Fairbanks, of the Harvard Flying Club, who flew a new OXX-6 Travel Air back for the club.

TWO new Fairchild cabin monoplanes have been ordered by the Colonial Air Transport, Inc., to replace the Fokker Universals now in use. These ships are expected in two or three weeks. We can see that Leroy Ponton "Bon Bon" DeArce wears his doggy clothes all winter. "Bon Bon" is the example "par excellence" of what the well dressed pilot will wear when he is in a cabin flying the mail—derby hat, 'neverthing'!

GRANDMA AMALITA BENNETT, 101 years young, accompanied by Grandpa Bradley, 99 years young, cele-

brated her first anniversary past the century mark by flying from Boston Airport to Old Orchard, Maine, in Harry Jones' Stinson-Detroit. The trip was a huge success, Grandma wishing that they could keep right on flying until they reached Europe.

Last year Grandma flew with Jones on her one hundredth anniversary, and had her first airplane ride on her ninety-fifth birthday. She plans, with any kind of break, to fly to the Pacific Coast when she reaches her one hundred and fifth year.

AN innovation in airplane repairing was launched by Z. D. Granville and his brother, when they equipped a ton truck with every means for airplane repairs, and began touring the surrounding states. This is the first time that such a service has been offered to the fliers of New England. Granville has his office in Arlington, and his company is known as the Granville Brothers, and can be reached at any time at 938 Mass. Avenue, Arlington. Grannie reports that he has not had a night's sleep in a month, and that it won't be long now. What won't? He didn't say.

THE Boston Herald is inaugurating a page of Aviation News, with Frank M. Prendergast as editor. This makes the second newspaper in Boston that has finally swung into line to help aviation along. Here's wishing Prendergast the best of luck!

THE Worcester Air Meet, scheduled for October 8, promises to be A Number One, with ships from Hartford, Springfield and Boston entered. It is expected that the inimitable "Kitty" Barrows will be present, and that means the crowd is going to have its share of thrills, for the way "Kitty" handles his Waco is a caution. B. F. Billings, of the Boston Airport Corp., will take one of the Stinson-Detroit's to the meet, and the Whirlwind Travel Air will also make the trip. Your correspondent expects to make the trip through the courtesy of the amiable Mr. Billings.

BARRETT AIRWAYS

THE BARRETT AIRWAYS, INC., have purchased a tract of land 68 acres in size on which they intend to establish a commercial airport. The field is centrally located in the heart of Westchester county, N. Y., and is now being graded, drained and leveled. Contracts have been given for the hangars to the Truscon Steel Company of Ohio. The shortest runway will be 1400 feet and the longest approximately 5000. The field office is now under construction and will be finished within a week. It is the intention of the company to equip and establish the most complete and up-to-date airport in the east.

Barrett Airways are distributors in the state of New Jersey and in Westchester County for the Travel Air. They intend doing commercial advertising, photography, sightseeing, cross-country flying, and a school for students is now being organized. The company also plans to establish airlines between the important cities of the east.

MINNESOTA AIR NEWS

By H. A. LINDBERGH

WHEN Col. Charles A. Lindbergh visited Little Falls on his tour, he was greeted by its people in the genuine friendliness of the small town, where he had spent his boyhood days and had left as a shy farmer boy to become an internationally known hero. Brutchter Field, a tract of land located 2½ miles from the town, was a busy place with the many ships that had arrived for Lindy's homecoming.

John A. Stephenson, Jr., and William Magie, piloted by Eddie Middagh, flew from Duluth as representatives of the Junior Chamber of Commerce from Duluth, of which Mr. Stephenson is president. Major R. S. Miller, commanding the 109th Aero Squadron, Minnesota National Guard, was a visitor at the field and the ships of this Air Unit did stunt and formation flying for the crowd.

Governor Christianson, in his speech of welcome on behalf of Minnesota, expressed the sentiment of the crowd assembled when he remarked that the people of Minnesota were disappointed that circumstances were not such that the inscription on the sides of the well known ship would be of local reference, but they were proud that within the Spirit of St. Louis rode the Spirit of Minnesota.

WISCONSIN AIR TOUR

THE Wisconsin Commercial Airplane Tour to be conducted by the Alonzo Cudworth Post of the American Legion is to be held October 11-12-13 starting at Milwaukee and including Manitowoc, Sheboygan, Green Bay, Neenah, Janesville, Racine, Oshkosh, Milwaukee, Portage, Madison, Monroe and Kenosha. Ten planes are to be entered in the tour.

H. A. Feldman, former instructor of aerial gunnery at Selfridge Field, is chairman of the tour committee. He will be assisted by John P. Davies, Clarence Blum, Charles Cahill, William Golden, Ira Jones, Gerald McWilliams, Russell E. Wirtz, Thomas L. Edwards, and Lee Hammond, all of whom were pilots in the Air Corps, and D. D. Allen, William Nethercutt and Herbert Voit, experienced aviators.

The purpose of the tour is to promote commercial aeronautics especially through the establishment of airports.

LARGE ORDER FOR EAGLEROCKS

THE Atlantic Airways Corporation of New Rochelle, with headquarters on Wilmot Road, has recently ordered \$300,000 worth of airplanes from the Alexander Aircraft Company of Denver, Colo.

The order is for sixty Eaglerock planes and fifteen of the cabin transport type. Delivery is to begin early in the spring and continue through next summer. The new cabin monoplanes will be enclosed for passengers and equipped with every device for safety and comfort.

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SEIZE the biggest thrill ever offered to man—the biggest adventure since time began—smash into Aviation—the game for men with sporting blood! Step into a life of excitement, daring and big money—away from a tame, narrow, humdrum existence.

Think what Aviation offers you, Thrills such as you never had before! The praise and plaudits of the multitude. And a chance to get in on the ground floor where rewards will be unlimited!

Amazing Opportunities

Aviation is growing so swiftly that one can hardly keep track of all the astonishing new developments. Air mail routes have just been extended to form a vast aerial network over the entire U. S. Airlines and airplane factories are springing up all over the country. Men like Henry Ford are investing millions in the future of commercial Aviation in America! The possibilities are so tremendous that they stagger imagination!

Everything is set for the greatest boom in

history. Big fortunes came out of the automobile industry and out of motion pictures. Big fortunes will also come out of

Aviation. The development of Aviation as an industry is bringing with it a call for trained men. The opportunities open cannot be overestimated. Those who qualify quickly should find themselves on the road to undreamed of money—success—popularity—and prominence.

Easy to Become an Aviation Expert

Get into this thrilling business at once while the field is new and uncrowded. Now—by a unique new plan—you can quickly secure at

home, during spare time, the preliminary training necessary to get a start in the Aviation Industry. Experts will teach you the secrets—give you the inside facts that are essential to your success. And the study of Aviation by our method is almost as fascinating as the actual work itself. Every lesson is chockful of interest—and so absorbing that you actually forget you are studying. But, best of all are the

ultimate rewards you are fitting yourself to gain.

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Say you saw it in AERO DIGEST

NEW FACTORY FOR NICHOLAS BEAZLEY CO.

A PRACTICAL proof of the healthy condition and growth of the commercial aircraft industry is the announcement of Russel Nicholas, president of the Nicholas Beazley Airplane Company, Inc., of Marshall, Missouri, that construction of a new steel and glass clear span airplane factory was started in Marshall on September 1st. The new Nicholas Beazley factory will have a floor area of over 15,000 square feet. It will be one of the finest and most modern airplane factories in the United States and will be used in addition to the nine sales rooms and warehouses now in use by this firm in Marshall.

Last year the Nicholas Beazley Company did a gross business of over \$500,000 and on September 1st of this year business had already exceeded \$1,000,000.

During the past two years they have sold over 1800 new OX5 engines and they have supplied many of the commercial aircraft manufacturers in the United States with their new engines, including the Advance Aircraft Company, Travel Air Manufacturing Company, National Airway Systems, Alexander Industries, Hess Aircraft Company, American Eagle Aircraft Company, Pitcairn Aviation Company, Swallow Airplane Manufacturing Company, Lincoln Standard Airplane Company, Kentucky Aircraft Corporation, Pheasant Aircraft Company, Birdwing Airplane Company, and others. In addition, practically all of the engines in the Sweeney Aviation School at Kansas City were supplied by this company. They have also supplied many other schools with engines and equipment.

Mr. Nicholas attributes the success of his company in a large measure to two things, the first being a complete stock of equipment, which is always kept fresh and up-to-date. In addition to parts and supplies for OX5, OXX6, Hispano Suiza and other motors, and Standard and JN4D parts, complete stocks of all new production equipment are kept in Marshall as fast as new production materials and supplies are placed on the market by manufacturers.

The other feature of the service which is accredited with being responsible for the success of the company is the fact that shipments go out almost invariably the same day they are received.

During the past two and one half years in addition to this supply business, the company has built up, completely reconditioned and sold several hundred Standard J1 airplanes, both long and short wing models,

in addition to other ships of their own design.

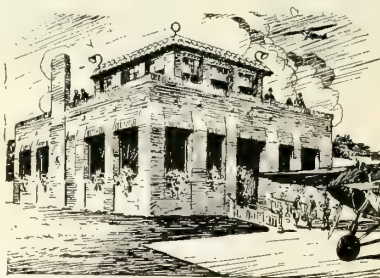
The company maintains a flying field one and one-half miles due east of the center of Marshall, Missouri, where a factory and flying school are conducted and they are opening a new field soon to take care of their steadily expanding business. From six to ten training planes are always in use—only new ships with new motors are used in the school. All ships are licensed by the Department of Commerce and all instructors have Government Transport licenses. In addition to the flying school, they give a complete ground course which includes actual factory and shop experience for the students.

Mr. Walter H. Barling, the internationally known aeronautical engineer, designer of the Barling Bomber for the United States Government, the largest airplane ever flown, is chief engineer of the Nicholas Beazley Airplane Company and is at the present time engaged in experimental work in Marshall which may result in the development of a new commercial airplane which will be marketed in the spring.

AIR PASSENGER DEPOT AT FORD AIRPORT

THE first completely equipped air passenger depot in America is being constructed at the Ford airport, Dearborn, Michigan. With its completion early in the coming fall will begin a new chapter in the development of airplane transportation.

The building will be two stories in height, of white brick, stone and Spanish tile construction. The first floor, 52 feet square,



Sketch of the air passenger depot being constructed at Ford Airport.

will include a waiting room with open fire place and restful, modern furnishings, an entrance hall, ticket office, baggage and mail rooms, telephone booths and wash-room and a pilots' office. A covered veranda, ten feet wide will extend across the entire front

of the building on the north side, facing the flying field.

On the second floor will be the port manager's office, a radio beacon control room and observation station. Around the entire building on this floor will be an uncovered esplanade, where in good weather passengers and their friends may have an excellent view of the arrivals and departures of planes.

Directly in front of the station will be a concrete runway where the planes will take on and discharge passengers.

"THE WISE BIRDS"

"THE Wise Birds," an organization of Detroit aviation enthusiasts, held their meeting at the Detroit Athletic Club August 29th, and elected officers as follows: president, Frank W. Blair; vice-president, William B. Stout; secretary, Ray Collins. The Union Trust Company was made treasurer. A committee on organization, consisting of Clark C. Hyatt, Austin Bement and William B. Stout, was named.

"The Wise Birds" have received their second Stinson plane, a seven-passenger monoplane. The organization also has decided to copyright the name.

As is well known, "The Wise Birds" is a non-profit Michigan corporation, originally formed for the pleasure the members get out or flying. The members include William B. Stout, who is the head of the aviation department of the Ford organization, Frank W. Blair, president of the Union Trust Company, Newton Skillman, president of the O & S Bearing Company, Charles Bohn, president of the Bohn Aluminum & Brass Corporation, Karl Keller, president of the Continental Equipment Company, Willard E. King, vice-president of the Detroit Life Insurance Company, E. S. Evans, William Comstock, Austin Bement and Clark C. Hyatt, all well known Detroit capitalists.

THE COLUMBUS OHIO JUNIOR AERO CLUB

THE first meeting of boys enrolled in the newly organized Columbus, Ohio, Junior Aero Club was held at Norton Field on August 13th. Members of the Columbus Co-operative Club, who are sponsoring the junior club project, attended the meeting and talked to the boys on aims, ideals, and work to be done by the organization. Work of cleaning up the abandoned barracks building on Norton Field, turned over to the club by Lieutenant McKee for workshop and clubhouse purposes, was begun and it is expected that within the near future the clubhouse will be ready for occupancy.



Some of the flying equipment at Nicholas-Beazley's School at Marshall, Missouri.

MAKE YOUR DREAMS COME TRUE — Aviation Will Do It

YOU can have ADVENTURE, POPULARITY, BIG PAY—the three things that every man desires. You do not need to sit at home and WISH you had them. They are yours for the asking. Every man wants HAPPINESS! That too, is yours for the asking.

You want a future. Can you think of any trade or profession in the past, present, or future that offers to man today, the opportunities flying does? You can not. *Why?* Aviation is popular and is a necessity to the world because of its SPEED. "Engagement pads full of appointments, the four wheel brake, eighty-five miles per hour—faster, faster, goes modern life. Flying is the answer." Major General Patrick says "Five years from now, aviation will be the safest mode of travel." Right now, flying is the second safest mode of travel—first comes the ocean-going steamship, then comes the airplane, then the railroads, then autos.

You say "Can I get a job after I complete your training?" Why, man, you should be able to; there are very few licensed Pilots in the United States outside of the Army and Navy. The reason why we haven't advanced as far as we should have in aviation is because we cannot get men fast enough. Aviation will never be over-crowded like the automobile industry, because the auto can only move on the ground, while the airplane flies over land and sea. Why then, waste your time in other lines when all you have to do to get into this new and wonderful field is to write us and find out how easy it is to be a BIG PAYED PILOT. Can you be a pilot? Yes! We teach a thorough theory course, put you through a rigid shop training and give you detailed flying lessons. Think of it—thirty actual flying lessons in the air is only part of your complete training here at our airport. We also have a HOME STUDY COURSE that will help you get into aviation if you do not have quite enough money to come to Chicago at the present time. A year from today are you going to be WISHING you had learned more about flying or are you going to



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CHICAGO AERONAUTICAL SERVICE INC.

THE FINGER LAKES AIRPORT AT GENEVA, N. Y.

THE Finger Lakes Airport at Geneva, New York, is controlled and operated by Spencer M. Punnett and Charles L. Wetherm. The field is situated five hundred feet above sea level and is on a plateau $1\frac{1}{2}$ miles west of Geneva, at the junction of two main highways. It is L shaped, 2800 feet north and south by 1800 feet east and west. It has a four ship hangar with office and service station at which transient planes can be accommodated. The field is always clear of fog.

The airport operators are the Alexander dealers for western New York, beginning at Utica. At present they have four new Eaglerock planes which are used for a general aviation business including student training which is in conjunction with a ground course. Living quarters are adjacent and the rates moderate. All flying is conducted by licensed pilots.

SPRINGFIELD MEET

By G. W. HAMBLIN, JR.

THE Springfield Airlines, Inc., of which Harry J. Hermann is president, Selden D. Sanford is treasurer, David Macy, is secretary and Arthur Macy is vice-president, not to forget William "Bill" Thomas, formerly of Hartford, now chief pilot of the Airlines, with a month of operation behind them, planned to run an Air Meet de Luxe on the Labor Day weekend. The events were scheduled to start on Saturday, September 5th, but the weather man and the hunt for Dan Cline gummed up the works, so things did not get under way until the next day, Sunday.

With twenty-five thousand people on the field, the first event on the program, an aerial parade, was run off to the delight of the citizens, many of whom had never seen so many planes in the air at the same time. Thirteen planes participated, flying in four formations. Capt. Christopher Ford, of the Boston Airport, led the first formation, with Lieut. Dick Cobb, also of Boston, in a Curtiss Hawk in number two position, and Lieut. Bob Nagle in a Consolidated in number three. The other three flights were mixtures of Swallows, Wacos, an Oriole, a clipped wing Standard and a regular Standard.

Event number two was a free-for-all race, with every ship on the field eligible. Dick Cobb in a Curtiss Hawk won the race in $6\frac{1}{2}$ minutes. Lieut. Shankle in a DH copped second place in 8 minutes, and Lieut. Nagle went around the course in a P-T in $9\frac{1}{2}$ minutes. Lieut. Ulrich placed fourth in his Swallow in 10 minutes and Harry Hermann came in fifth in a Swallow in $10\frac{1}{4}$ minutes. W. P. Thomas, of Copland-Brinton Air Service, of Hartford and Bill Ulrich tied for sixth in 11 minutes.

Ralph C. "Kitty" Barrows, of the New England Aircraft Co. of Hartford took the next event scheduled, which was the landing to the mark contest.

Between events, the Y. D. Band rendered selections, and Dick Cobb entertained the crowd with stunts.



An air view of Finger Lakes Airport, Geneva, New York.

After Cobb and the band had strutted their stuff, and many passengers were taken up for joy hops, the altitude race was run. Bill Thomas in the Oriole, with two passengers, climbed to 5,400 feet in 12 minutes, taking first place by a wide margin. Robert Lowell of Curtiss Field pushed his Waco to 3,100 feet in 10 minutes; P. H. Spencer of Hartford, also in a Waco climbed 2,800 feet in 10 minutes.

Arthur Henry Johnson, of Brainard Field, Hartford, gave the spectators heart failure, measles, mumps and whooping-cough by leaping out of a ship at 1,500 feet, dropping 1,000 feet and then opening his parachute.

The second day of the meet, Monday, Labor Day, was another ideal day for flying. The usual parade of all ships was run off on scheduled time and then the committee, under the direction of Harland F. Banks, Edgar H. Stone and Lieut. Alfred Glode, field director, lined up the final afternoon's features, and got things moving.

B. F. Billings, operations manager of the Boston Airport Corp., blew in with his Stinson-Detroiter, having as passengers the Franklin Colliers, senior and junior, Doctor Goode of Boston, and Eddie O'Toole. Robert O'Brien followed Billings in the Corporation's Whirlwind Travel Air.

The Mt. Tom Derby was won by Harry Herman, of Springfield Airlines, in 25 minutes. Capt. Chris Ford, with Sergeant Harry J. Jenkins as passenger, tied for second place with Burke's Travel Air.

K. A. Lindsay, of the Waterbury Light Plane Club, walked off with the Bombing Contest in the club's Jennie—the only Jennie on the field, by the way.

This reporter, while reposing under the wing of the D. H., had a sudden and unexpected brainstorm, and when the smoke died down, a wov of an idea was found. Upon broaching the subject to Banks, and receiving that worthy's O. K., we went about bestowing the title of Miss Aviation on the daughter of Maj. Frederick J. Hillman who was presented with a silver loving cup by Dick Cobb.

Everybody connected with the meet deserves the greatest praise for the excellent manner in which the meet was conducted.

GUGGENHEIM AIDS AERON. METEOROLOGY

THE Daniel Guggenheim Fund for the Promotion of Aeronautics has given much attention to the importance of meteorology in aviation. The Fund has from time to time received various suggestions with regard to different meteorological problems of practical or theoretical nature, bearing upon aviation.

Since the Fund itself does not engage in research work or administrative questions which properly belong to existing government institutions, it felt that some agency should be created through which the Fund could establish closer contact with the activities of the government and to which such suggestions might be referred. Such an agency should be given the opportunity to discuss all kinds of problems in the boundary field between meteorology and aviation.

As a result of a conference between Harry F. Guggenheim, president of the Daniel Guggenheim Fund for the Promotion of Aeronautics; F. Trubee Davison, Assistant Secretary of War for Aeronautics; Edward P. Warner, Assistant Secretary of the Navy for Aeronautics; William P. MacCracken, jr., Assistant Secretary of Commerce for Aeronautics, and Charles F. Marvin, Chief of the Weather Bureau, the Guggenheim Committee on Aeronautical Meteorology has been formed to coordinate research in this field. The committee is composed of C. G. Rossby of the Guggenheim Fund; Willis R. Gregg of the Weather Bureau; Major William R. Blair, U. S. Army; Lieutenant F. W. Reichelderfer, U. S. Navy, and Thomas H. Chapman of the Department of Commerce.

The committee itself cannot take up research work to any great extent, but it is in a position to encourage and support investigations by suitable persons or institutions and to direct the attention of research men to the essential problems. Any suggestions from pilots or others interested in aviation and meteorology will be welcomed by the committee and will receive careful consideration. The address of the committee is "The Daniel Guggenheim Committee on Aeronautical Meteorology, c/o Weather Bureau, Washington, D. C."

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At our field you will see planes landing from the commercial manufacturers (90% of all the commercial planes built in America are produced in the mid-continent section where we are located!)

In our supply department you will see from 50 to 100 separate orders, totaling thousands of dollars being shipped every day. You will see shipments going out to Waco, Travel Air, Eaglerock, Swallow, Air King, Pitcairn, Lincoln Standard, American Eagle, Hess and many others. You will see so much in a few minutes that you will be convinced that here is the school you are looking for—that here is activity and opportunities and facilities unequalled by any other school in the world. You will realize that at last the day of haphazard training is over—that we have gone to pains and expense never before attempted by any school.

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A CONSOLIDATION OF INTERESTS

THE organization of the Consolidated Instrument Company of America, Inc., is somewhat different from that of any other company in the aircraft industry in that it is operated along the lines lately developed in the automobile industry. Since the aircraft builders have shown a tendency to enter into real quantity production, it has been found necessary to supply instruments of all types promptly and in larger and larger quantities.

The nature of these individual aircraft instruments is vastly different, and the same class of workman, and the same equipment cannot be used to produce each. Thus, the manufacture of altimeters, requires entirely different means than the production of tachometers, and compasses still different methods.

It was for this reason that the Consolidated Instrument Co. brought together a group of specialists (individual manufacturing concerns) under one distributing and technical advising head. This new Consolidated line is made up of six associated manufacturing organizations, each of which has been specializing in its individual line for an extended period of time. By quantity production methods, it has been possible to reduce very considerably the cost of all aircraft instruments, and aeronautical constructors are now assured of quantities sufficient to meet their requirements.

One of the most interesting of the new Consolidated instruments is the Star Pathfinder Compass. This instrument includes a built-in compensating unit eliminating the use of troublesome loose magnets, also a spherical magnifying cover lens, permitting the use of a small light dial and yet affording great visibility. Another feature of the lens is that it permits placing the compass at any reasonable angle from the observer (to get away from local magnetic influences) without introducing any appreciable error in reading.

Another new development is the Tag Altimeter which has been designed along the lines suggested in the official reports of the U. S. Bureau of Standards and the National Advisory Committee for Aeronautics. All altimeters in use on modern aircraft are in principle aneroid barometers utilizing metal diaphragms, and, as such, they are subject to errors due to imperfect elasticity of the diaphragm.

Recognizing the fact that it is practically impossible to find two diaphragms in production manufacture having exactly the same elasticity and characteristics, the main feature of advanced design of the Tag Altimeter was developed. This consists of the actuating cam which is cut under a vacuum and its contour individually shaped to fit each separate diaphragm. Thus, any imperfections or differences in diaphragms are compensated for and precision results obtained.

A valuable feature of the Tag Altimeter is the "Barometer Setting" scale. Where barometer pressures are known at various points along a line of flight, it is possible

for the pilot to correct his altitude readings at this point for varying barometric pressures. When it is considered that an increase of 29 or 30, or a decrease from 29 to 28 barometric pressure, corresponds to approximately 1,000 feet of altitude, it will readily be seen that flying over mountainous or irregular country at times when visibility is poor makes it dangerous without this means of adjustment. Another use of the "Barometer Setting" scale is that it can be utilized as a regular barometer when the altitude is known.

The Tag Altimeter embodies a uniform scale $3\frac{1}{2}$ inches in diameter. A knurled knob is provided for adjustment of the zero point of the altitude scale to coincide with the position of the pointer at the start of a flight.

In addition to the above, Consolidated offers a new type of air speed indicator, the Jones tachometer, pressure gauges, gasoline level gauges, temperature gauges, etc.

DETROIT AIR NEWS

BY FRANK BOGART

A REPORT of the Ford Motor Company's airplane operations, as of September 1, shows that in the two years, four and one-half months since Ford entered aviation, the company's all-metal transport monoplanes have carried 4,000,000 pounds of freight and 16,000 pounds of mail. The first mail was carried February 15, 1926, on the first Ford freight line which opened to Chicago April 13, 1925. On July 1 of that year the Cleveland line was started and on March 26 this year the third line, to Buffalo, was opened.

Important information bearing on the cost of air freight carriage is now in preparation. The operations record to date shows that 3,588 trips have been completed and that there have been ninety forced landings, 54 of them due to weather. It was the worst storm ever recorded between Detroit and Chicago which caused the only fatality in the Ford service, that of Pilot Ross Fitzpatrick.



Frank Ripplingille, 13, congratulated by his instructor, Clyde Emrick on receiving his pilot's license.

The total mileage of the Ford machines to September 1 was 670,297, and the total flying time was 7,528 hours and 45 minutes. The present tri-motor type will carry a load of two tons, but several of the single Liberty engine craft are still in service.

FROM the headquarters of National Air Transport, Inc., whose guiding spirits and financial supporters are largely recruited from the ranks of Detroit business men, comes word that the daily poundage on the New York-Chicago mail division which was taken over September 1, is between 1,600 and 1,700 pounds. N. A. T. is now operating 28 machines flying 5,000 miles every 24 hours. On the Chicago-Dallas line which is 17 months old, the operating record shows an efficiency of 97 and one-half per cent.

DETROIT'S capture of the Gordon Bennett Trophy in the international balloon race September 10 means much to the advancement of the lighter than air phase of the city's aircraft program. Edwin J. Hill and Arthur G. Schlosser, engineers of the Aircraft Development Corporation, who piloted their bag 710 miles to Baxley, Ga., beating out such veteran contenders as W. T. Van Orman, the 1926 champion, and Ernest Demuyter, of Belgium, rated the best balloonist in the world, had themselves never had any training in ballooning until two years ago.

THE business being done by the Stout Air Services, Inc., in passenger carrying continues to be both surprising and encouraging. In June, July and August a total of 8,672 persons was carried on the quarter-hour, five dollar sight-seeing trips over Detroit. The past month the patronage has continued at the average rate of 150 persons a day. It is probable, says Stanley E. Knauss, general manager, that this service will be kept up well into the fall, and that not until more equipment is obtained will any attempts be made to start regular airline service to Cleveland, as was planned after the Detroit-Grand Rapids line was abandoned.

Other airlines in which Detroit capital is involved are reporting good business, including Western Air Express and Northwest Airways, Inc.

HILT SALES MGR. FOR YOUNG RADIATOR CO.

J. J. HILT is now sales manager for the Young Radiator Company, Racine, Wisconsin, who are making a specialty of the heavy duty radiator manufacturing field.

Mr. Hilt has been associated with the Racine Radiator Company and its predecessor, the Perfex Radiator Company, and has had a long experience in this field, having been associated with Mr. F. M. Young, president of the Young Radiator Company, in the former companies as assistant to Mr. Young and in various capacities.

The new plant of the Young Company is modernly and completely equipped to render highly satisfactory service.

"Hangar completed in time"

—says American Legion Post!

Hurry—speed—rush! Airport to be dedicated! Hangar must be up! With this need for exceptional attention Butler service stood the severe test. The hangar for the dedication of the Mason City Airport was up in time and ready and everyone was satisfied.

The Clausen-Worden Post 101 of the American Legion, Mason City, Iowa, liked the Butler service so well that it felt grateful and wrote and said, "We want to thank you for getting our hangar completed in time for the Airport dedication. We know that you did not have very much time to do this and that you were put to considerable extra trouble in order to accomplish this. We want to especially thank your salesman, Mr. Stearns, for the splendid help and co-operation that he has given us."

The type shown below can be used for individual or large hangars.

Butler Hangars are ready-made entirely of steel. They are non-combustible. Wall and roof sheets are 24 gage tight-coated galvanized steel with deeply drawn paneled corrugations for added strength and stiffness.

Doors operate on rails. Butler Hangars have plenty of light.

Wall and roof sheets are bolted together and to the steel frame by means of galvanized bolts. This provides a secure fastening for the sheets and avoids the noise of a loose rattling sheet.

Butler Hangar is ! FIRE-RESISTANT ♦

At any time Butler Hangars may be economically enlarged or if desired they may be taken down, moved and re-erected with practically 100% salvage.



Inside view of Butler Ready-Made Steel Hangar at the American Legion-Chamber of Commerce Airport at Mason City, Iowa.

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Prices are quoted f. o. b. plant or erected. Write for complete details today.



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OHIO AIR NEWS

By T. E. LUNSFORD

THE air conference held in connection with the Ohio State Fair was attended by many notables, representing the different departments of aviation. A series of meetings were held in which various problems connected with air transportation were discussed, including commercial aviation, government regulation, state and municipal control, physical equipment and other phases.

At the opening session, the visiting delegates were welcomed at the State House by Governor Donahey's committee on aviation, the aviation committee of the Ohio Chamber of Commerce, and officers of the Columbus Aero Club.

W. C. Young, chief of the aeronautical division of the Goodyear Tire & Rubber Co., presided at the opening on September 1st, which was addressed by Capt. Paul Riddle of the Embry-Riddle Co., Cincinnati, on Commercial Air Transport, and Hugh Allen of the aeronautical division of the Goodyear Tire Co., on Practical Long Distance Flights for Commercial Hauling.

In the afternoon a session considering government regulation of aviation was held in the Ohio building, in charge of David S. Ingalls, Cleveland, chairman of the joint legislative committee on aviation. John Vercy, president of the Columbus air board, talked on State and Municipal Control.

On September 2nd the subject of Municipal Airports and Landing Fields was taken

up. Lieutenant Donald Duke told the delegates of the physical equipment and requirements necessary for airports, while Clayton Bruckner, president of the Advance Aircraft Co., Troy, Ohio, talked on Financing Commercial Aviation.

Talks were also given by: Brigadier General William E. Gilmore, chief of the materiel division of the Army Air Corps; William A. Stout of the Stout Metal Airplane Division of the Ford Motor Co.; Major Clarence Young, director of Aeronautics for the Department of Commerce; T. C. McMahon and Stanley Sommers, chief and assistant chief of the technical data section, McCook Field; Bradley Jones, instrument section, Wilbur Wright Field; Jack Boettner, Akron balloon pilot; Lieut.-Commander Watson, U. S. N.; Lieut. Calloway, U. S. N.; and Lieut. Frank McKee, Commander, Norton Field.

The conferences ended with a dinner at the Hotel Deshler on September 2nd, at which Lieutenants Lester Maitland and Albert Hegenberger, who recently flew to Hawaii, related their experiences.

OFFICIAL endorsement of the \$425,000 bond issue for a new municipal airport for Columbus has been voted by the board of directors of the Chamber of Commerce. A resolution endorsing the bond issue was also passed by the City Club. It was also stated that steps would be taken to encourage airplane manufacturers to locate in Columbus. The issue was recently approved

by the Columbus City Council by unanimous vote. The proposal will have to be approved by the voters at the November election.

A FLYING field established near Martins Ferry is to become that city's official airport. With completion of the Ohio River Highway the new airport will also serve Wheeling, W. Va.

MAYOR ARTHUR T. SCHULER, Bucyrus, is sponsoring a movement to establish a municipal airport for that city. It is proposed to use the city farm in the southwestern part of the corporation for the airport.

A COURSE of technical instruction in aviation for its members has been announced by the Columbus Aero Club, Columbus, O. Captain R. C. Williams, chairman of the membership committee, announced that new members will be admitted for \$15 for the remainder of the year and all of next year. This fee will entitle the member to the course of instruction. Membership has been increased from 92 to 311 members during the last few weeks.

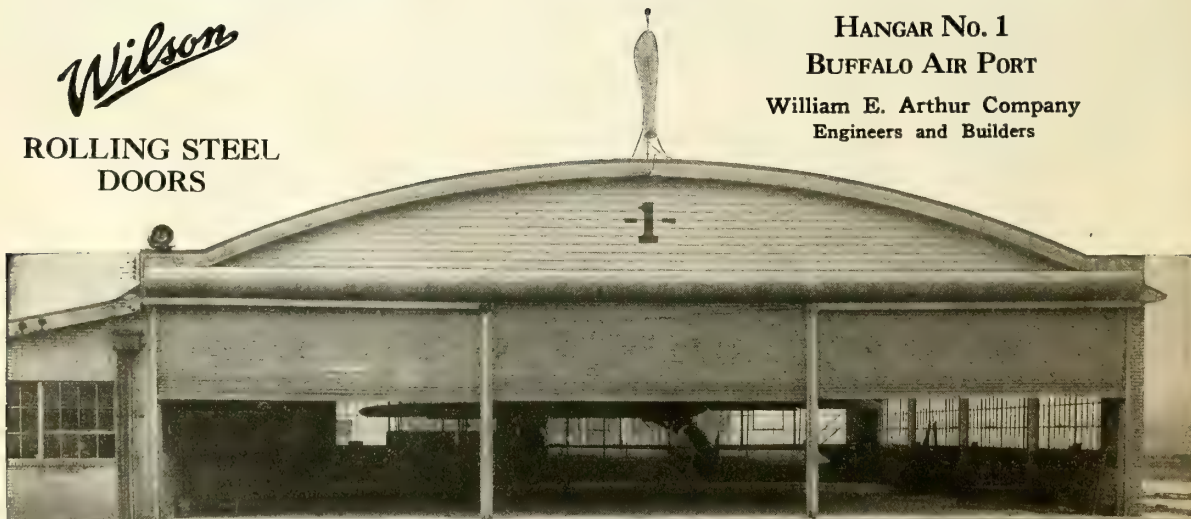
REGULAR airplane passenger service between Detroit, Cincinnati and Jacksonville, Fla., will start November 1, according to announcement of William C. Wakefield, president of the Dixie & Northern Air Line, Detroit.

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ST. PAUL AIR NEWS

By W. S. SCHLEY

THE outstanding feature of the Minnesota State Fair, held September 3-10, was an aircraft exhibition, the first of its kind in the Northwest bringing together nearly two dozen different types of airplanes, among which were the Hess Bluebird, Waco, Laird, Ryan and Douglas.

THE Northwest Aviation School of St. Paul, operated under conditions as rigid as government schools, has been established by St. Paul fliers of note and will hold its first instruction in ground work October 18.

Eight instructors, experts in their special fields, are on the list with three of the best known fliers in the Northwest as officers. These are: A. W. Nelson, president, and Lieutenants Thomas D. Lane and Chadwick B. Smith, vice-presidents.

The aviation course includes classes in airplanes, rigging, motors, theory of flight, meteorology, topography, instruments and navigation. Ten hours' actual flying time will be given each pupil in the latest of training planes.

A ST. PAUL-DULUTH-SUPERIOR daily air passenger service was inaugurated recently by the Trump Airways, Inc., using Buhl airdsedans on the line.

The passenger fare from St. Paul to Duluth or Superior is \$17.50 with 20 pounds of baggage allowed free. Ships leave St. Paul at 9:10 arriving at Superior Airport at 10:35. The southbound ship leaves Superior at 3:30 arriving at St. Paul 4:55.

NAT'L LEAD BATTERY CO. USING LAIRD PLANES

THE National Lead Battery Company has purchased a Laird ship, powered with a Wright Whirlwind engine, to be used in the general conduct of their business.

About six years ago, Mr. L. J. Shields, president of the company, foresaw the advantages of decentralized manufacturing and as a result opened factories and branches in Chicago, Kansas City, Dallas, Spokane, Seattle, Portland, Oakland, Los Angeles, So. Kearney, N. J. Baltimore, Atlanta, St. Louis, Cincinnati and Detroit.

The transportation problem which resulted for the officers and department heads of the company has now been solved. Speedy trips can now be made by plane to and from factories and branches. Mr. Shields has realized for some time that commercial aviation was at the threshold of American business, and his purchase of this plane proves his sincere belief in commercial aviation. The company's plane competed in the New York-Spokane Air Derby.

STEINHAUER FIELD

J. E. STEINHAUER, general manager of the Steinhauer Aircraft Sales Company, Lemoyne, Penna., has recently opened an airport just one mile and a half from Harrisburg. The field is 1,400 feet by 800 feet, is marked with a large circle in the center, has boundary markers windcone and hangar.

Gasoline, oil, water and spare parts and service are available at the field.

FLORIDA AIR NEWS

THE St. Augustine Air Race Labor Day inaugurated the first airplane race held in Florida. Five planes participated. The race was won by E. C. Neilson of the Orlando Air Lines in an OXX-6 Travel Air. A. B. McMullen of Tampa was second in a Waco-10. The 20-mile race was run over a two mile straight-a-way marked out on St. Augustine beach. Between eight and ten thousand people witnessed the race and a number of them flew in the planes before and after the race.

The other pilots participating in the race were Jimmie Johnston of the Orlando Airlines, third; Bill Alexander of St. Augustine, fourth; and Bill Myers of Daytona Beach, fifth.

WILLISTON FLYING FIELD has been put in condition by V. H. Shaw, sub-dealer for Eaglerock planes. The field is located one mile east of Williston, just east of the A. C. L. Railroad. The hangar is at the north end of the field, which is T shaped and large enough for all single-motored ships. Gasoline, oil, parts and mechanic service are available.

TOLEDO, OHIO, AIRPORT

THE Toledo airport commission recently voted to appropriate \$15,000 to lease and equip as an airport the Walbridge farm on Stickney Avenue, which is two and one-half miles north of the post office. Lieut. Col. Thomas J. Gallagher is one of the active workers to establish a Toledo airport.



THE Burnelli type RB2 is the world's largest passenger airplane. In addition to a crew of three, comfortable seating accommodations are provided for thirty passengers in a cabin 14 feet wide, 6½ feet high and 16 feet long in an airfoil section fuselage. Power required: two 650 h.p. water cooled engines. Burnelli types of monoplane or biplane design.

SOME OF THE ADVANTAGES OF THE BURNELLI TYPE:

Accessible multiple engine compartment
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Truscon Hangar Doors coast open! Roller bearings and correctly designed tracks and pulleys make it possible to open or close them with one arm! They are rigid, perfectly aligned, will not warp or stick and are of rust resisting copper-steel. They give fire protection and freedom from the danger of high winds, yet their ample window space admits plenty of daylight when closed. They roll back into small space for the free and unobstructed passage of planes. The nation-wide organization of Truscon will give you suggestions, estimates and complete information.

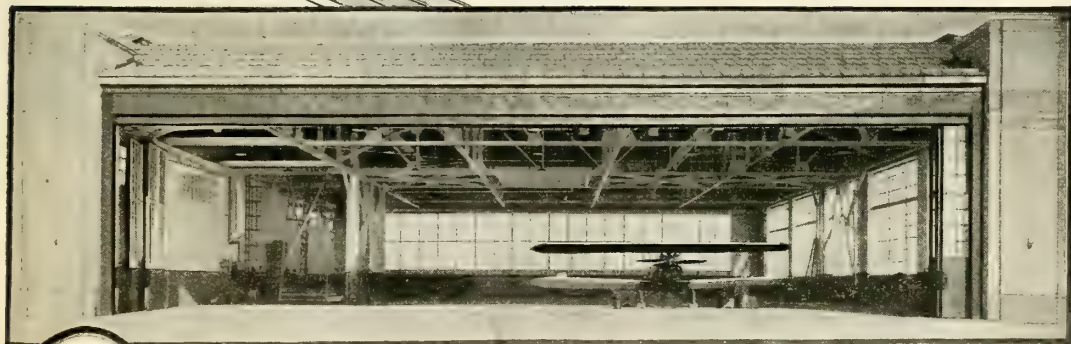
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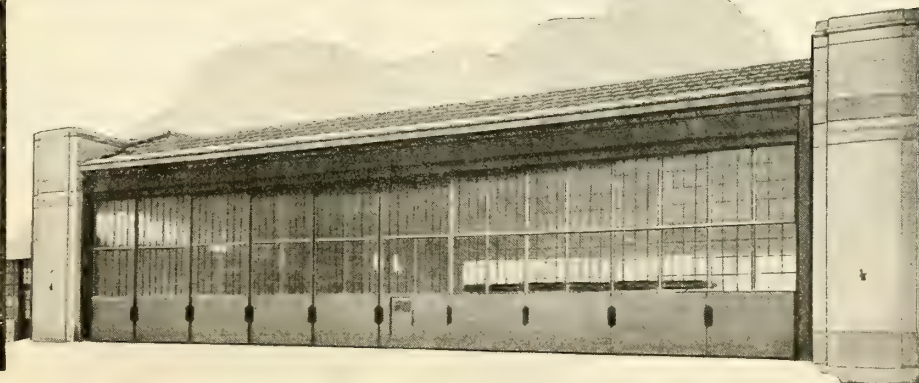
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ACROSS AMERICA ON "WINGS OF PROGRESS"

(Continued from page 391)

we could out-manuever him and beat him in navigating we would be up against it. Furthermore, Miller had no passenger in his plane whereas *The Wings of Progress* had. Our motor was also leaking oil and necessitated an additional gallon at each stop. There was no time to remedy such a small defect in a race like this!

Judicious navigating on the next lap into Fargo, N. D., brought us ahead of Miller after passing through the lake and hill country of Minnesota, not to mention several thunder showers. From Fargo into Bismark the weather was clear but cold with head wind blowing. At each control station we stopped only long enough for gas, oil and water. So one sandwich and a cup of coffee sufficed for lunch.

Leaving Bismark we passed out of the level prairies over the famous bad lands—and how! Some country to land in after dark or in the daytime even! By the middle of the afternoon Miller was again in the lead and a Hamilton Metal Monoplane (Wright Whirlwind Motor) caught up to us and stayed along nearly all the way into Glendive. This ship was not in the derby but was going on to Spokane for the races.

The bad lands from the air make a beautiful and weird sight but from a pilot's standpoint are indeed ugly.

About 4:45 in the afternoon we reached

the Yellowstone River, leaving the bad lands behind with sighs of relief—sparsely inhabited country and a long way from home! One marvels at the reliability of many of these OX5 motors built ten years ago and still going strong. Ours did not miss a stroke on the entire 2,400 miles and Charley ran it wide open all the way.

In the crystal clear atmosphere of the open plains we sighted the smoke of Glendive miles ahead over the curvature of the earth. About 5:15 we landed at the new and excellent airport there, to be welcomed by a big crowd that had come to town for this event from miles around. The interest that people out here are taking in aviation is truly remarkable and argues well for the future of this industry in the west, where every man's back door is his own landing field (the Rocky Mountains and bad lands excluded).

This completed our longest day's run of 1,100 miles and still left us five minutes behind Miller in elapsed flying time. A close race, indeed.

Our sole chance was to lighten our load and out-navigate him over the Rocky Mountains and Bitterroot. I had already planned on taking the night train on the N. P. for Spokane, as well as our suitcases, spare tools and parts.

Mr. Carl T. Vance of Great Falls, Mont., had flown in that afternoon with a rush load of Penzoil from Spokane for the derby planes. He has a Stinson-Detroiter—a Wright Whirlwind cabin plane. This was most fortunate for us. Vance helped us ad-

just the motor that evening. In fact, he did most of the work and offered to take me and our baggage in his Stinson back to Spokane on Wednesday. Vance is one of the best, and best-liked fliers in the west, and small wonder if he treats everyone the way he did us.

Another early rising on Wednesday and a beautiful day for flying—cool, clear and only a light head wind.

Vance and I took off in his Stinson ahead of the derby-planes and were ready at Billings to help Charley gas up when he arrived just after us. His speed was just about equal to Miller's with the extra weight removed.

Here we had our first real view of the Rockies lying ahead of us in a jagged mass against the sky. Here would be the stiffest test of pilot and machine. Would the motor stand the gruel of pulling over the 9,000 foot pass and would Meyers find a shorter route than Miller? *The Wings of Progress* was now almost 2,000 miles from New York and not more than five minutes behind Miller's Eaglerock. The planes were about equal—ours was "streamlined" and he had a "pepped up" motor. These last hours were indeed nerve-racking. Would our motor "cut out" over a perilous gorge or forest-covered summit? Would Meyers find his way across the ranges? He had never been west of the plains before, and Miller had crossed the mountains five times. Would our plane be forced out of the race at the last minute, or would we win the \$5,000? I be-

THE WINNING WACO TEN!



WE are New York Distributors for the stock model Waco 10 — the same type of plane in every respect that won the Class B New York-Spokane Air Derby piloted by Charles W.

Meyers. Price \$2385 F.O.B. factory.

Flying instruction given in planes in first class condition by experienced pilots.



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COMBINE the advantages of individual design with economy and speedy erection.

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Designed to meet the owners' ideas and needs, built speedily at a great saving by applying Parker Standardized Framing Units.



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SIZE—Parker Buildings provide ample clear hangar space with no obstructing columns.

ARRANGEMENT—Series A Buildings have shop besides storage space.

FIREPROOF—Series A Buildings are absolutely fireproof. The trusses, framing units, sash and doors are of steel. Sidewalls and roof are asbestos-cement consolidated under pressure to produce virtually a fabricated stone. Fire cannot crack, blister or warp them.

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lieve the last few hours of that race were the most exciting and thrilling moments of my life.

One of the tensest moments came in Missoula when Meyers flew in two minutes ahead of Miller to our great relief. We gassed up and oiled the motor and then it wouldn't start. Glad there were no ladies present at that instant! After three breathless minutes as we were rapidly losing our high hopes, Vance got the OX5 going once more and off goes Charlie just as Miller flies into land!

Now for the last lap of 170 miles up over the Bitterroot Mountains. All of the melodramatic thrills of a lifetime were packed into two long, long hours. Vance and I were flying ahead up through a winding gorge towards the summit. Whenever we lost sight of the little Waco—well, perhaps, you can imagine how we felt. With relief we saw it pop again into view miles in the rear.

Finally the summit was reached at 8,000 feet and we glided down to the foothills on the Washington side, over Lake Cour d'Alene, new homesteads in recently cut over land, and the gateway to the "Inland Empire". There ahead of us lay Spokane and in a few minutes we circled above the cheering thousands at Spokane Airport, while *The Wings of Progress* glided in to a perfect landing, winner of Class "B," twenty-eight minutes ahead of Leslie Miller! All credit is due to Pilot Meyers, Earl Vance, our good little plane and "old lady Luck".

TEXAS AIR NEWS

By MONT HURST

THE Dallas Flying Club is requesting the city to pass an ordinance embracing all federal air laws, especially in regard to stunt flying. The club, composed of local flyers, is giving its full support to all laws that will govern flying and make it safer.

THE Great Western Air Transportation Company has been organized in Denver to operate an air mail, passenger and perishable goods transportation business in Colorado, Kansas and Texas. Cities included in the route are Denver, Wichita, Kansas, Dallas, and Fort Worth. Four planes will be used at the start. Officials of the new company are D. A. McDonald, O. P. Willoughby and Carl S. Milliken.

PASSENGER carrying has been started on the Dallas-Chicago line of the National Air Transport and travellers are using the new service. Eleven passengers used the new service the first day. Herbert Kindred was the pilot of the first plane to carry passengers.

NEW squadrons of the "Aviation Cadets of America" are being recruited in Dallas. The Oak Cliff squadron was the first one organized and they are being uniformed and drilled. Capt. J. L. Freeze is commander of the Oak Cliff squadron; Tom Hardin is director of aeronautics and Capt. W. H. Scott, national secretary. The cadets

have a hangar at Love Field where aeronautics are being studied from theory to actual flight. Mr. Martin Weiss has donated the use of the hangar for the cadets and it is being made into a clubroom and study room for the boys. Parades and study are held each Saturday.

THE charter of the Temple, Texas, Aero Club has been changed. The new name will be the Texas Aero Corporation and the new company will manufacture airplanes, several of which have already been built and flown successfully. A new factory is nearing completion in Temple and the new concern has orders for six mail and passenger planes to be used on the new Ft. Worth-Dallas-Houston-Galveston-San Antonio air mail line. The incorporators of the new company are, E. K. Williams, pioneer aviator and publisher of the *Temple Daily Telegram*, George Williams, George Carroll and Roy Sanderford.

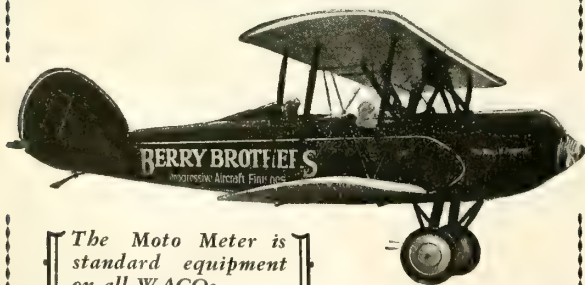
PLANES from Dallas, Oklahoma City, San Antonio, Denver, Temple, Houston and Ft. Worth were entered in the recent Austin air circus. Acrobatic and formation flying was a big part of the program. Army planes from San Antonio, took part in the contests. Other events were speed races, upside-down endurance contests, dead stick landing, and altitude contests. Cash prizes were hung up and the programs were financed by Austin business firms. The events were free to the public.

THE BOYCE MOTO METER

is part of the equipment on the

WACO 10

that won the Class B New York to Spokane
Air Derby: C. W. Meyers, Pilot.



*[The Moto Meter is
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on all WACOs.]*

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American Hammered Piston Rings

OX5 Standard size, 4" x .280, 25c each
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OX6 Standard size 4 1/4" x .280, 30c each
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Hisso, A, E & I, 4.724 x .098 Compression ring, 40c each
Hisso, A, E & I same size bevelled oil ring, 50c each

All rings wrapped separately in oiled paper, packed in original boxes of 12 rings.

We are distributors for American Hammered rings and offer attractive discounts to established dealers and manufacturers on quantity orders. Enquiries invited.

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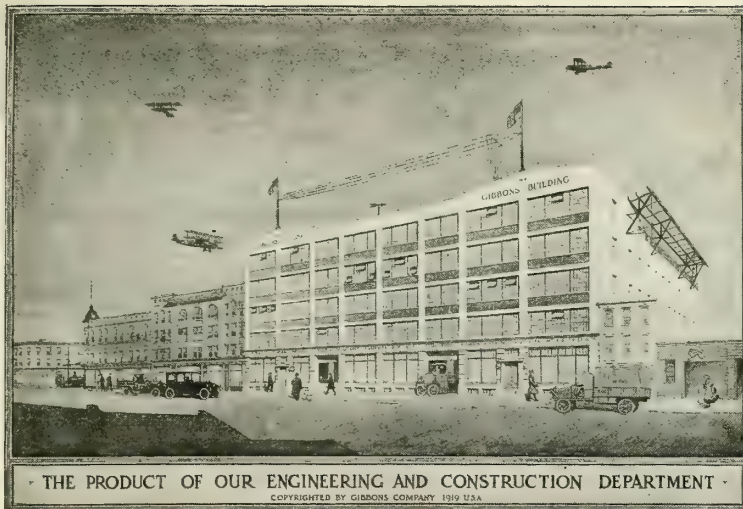
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The launching and landing devices make such an installation on buildings, piers or other structures entirely practicable, also on rocky Coasts, Mountainous Country, Forests and Mooring masts.

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Comments of the Press of the United States, Canada, English, also German, French, Italian, Spanish, etc., papers on the above subject.

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The Gibbons Aeroplane Landing and Launching Devices

A. These devices will take only four men to handle and they will not cost or weigh more than 16" guns, or the catapult, equipments, etc.

B. Any battleship can use four of our landing and launching devices at one time, and can land or launch four planes at the same time. The present aeroplane carrier can land or launch only one plane at a time.

C. Our devices will make every ship its own carrier, and will function in landing or launching no matter what way the wind is blowing. It will automatically face the wind.

D. In case a ship is slowing down in speed or not moving, what a help it is, especially in action. This applies to ships and the same system can be applied to buildings, etc., no matter in what direction the wind is blowing.

E. Ocean liners can have one to two landing and launching devices of our type to land and launch planes or amphibians.

F. Admiral W. A. Fullam, on November 10, 1924, made the following remarks: "I foresee the carrying of planes by ocean steamers to leave the ship when near land with express mail and passengers, saving a day or two. Landing decks on good sized steamers are perfectly feasible."

G. If the aeroplane carrier is disabled while accompanying the fleet when in action, what then? But if every ship of the fleet has one to four landing and launching devices that will make every ship its own carrier and not interfere with the gun fire.

H. Our own as well as foreign governments know the cost and upkeep of catapults, planes, etc.

The catapult now in use is only a temporarily makeshift. This is known by pilots, the aeronautical public and some of the service officers, especially those that are retired.

What use is the catapult in the presence of the enemy? Capital ships cannot hoist planes from the water by the use of derricks in the presence of an enemy. In place of this method, planes should land and launch with their own power and not be hoisted from the water to the ship. In case of stern and bow gun fire with catapult on the lower deck and the lower deck guns in action the catapult is in the way of gun fire.

What use are they for public, private or commercial purposes? Planes operated by catapults must be specially built or altered to accommodate the catapult. What is necessary for the advancement of the airplane in public, private and commercial use is a simple device from which the standard make of plane or amphibian can land or launch with their own

Our Aeronautical Landing and Launching Devices are patented in this and Foreign Countries.

They can be used on Buildings, Ocean Liners, Battleships, Piers, Public Buildings, Post Offices, Municipal Stations, Hospitals, Theatres, Isolated places, Rocky Coasts and Pleasure resorts.

Also for Commercial or Private use. This is a separate department from our Building Business.

power without being altered. Such as Chamberlin made from the Leviathan on August 1st, 1927.

Philosophy provides for contingencies which formula never does. Force of character and indomitable persistence are the things that win. Colonel Lindbergh and Clarence Chamberlin proved this.

We agreed with Colonel Lindbergh when he said, "It will take some time to work out the unsolved problems of aviation."

We wish to announce for the first time that we patented four separate landing and launching devices some time ago. Three of these devices have not been made public, the working model of the fourth device, which some three years ago received publicity, was examined by representatives of the Army and Navy or four foreign governments, and our own, and we were complimented by them. This device has a number of very important improvements over the model in question. Any one of these four devices can be used in part or whole to meet the situation or place in which it is to be used, and will only occupy a space at the base eighteen feet in circumference and the maximum in diameter is forty-five feet; a space saver. The former for scouting planes and the latter for bombing planes. The recent short run or take off of planes enables the devices to be cut down in cost, weight and size, and also to simplify their construction.

1. These devices are the result of intensive study and experimentation since 1919 by their inventor, Mr. R. J. Gibbons, assisted by a staff of Naval, Electrical, Mechanical, Aeronautical, Structural Engineers, and Pilots.

2. The efficiency of these devices has been commented on by Professors of Aeronautics, also by noted Aeronautical Engineers and Flyers (not in our employment) who have seen the working of our model. Their letters to us state that our invention will play one of the greatest parts in developing commercial aviation, especially now with the demand.

3. The municipal landing port or commercial landing facilities and storage in the near future will be a skyscraper hangar for the storage of planes on each floor the same as our tall garages now have to accommodate cars, with elevators from roofs and ramps.

4. Arthur Brisbane in his editorial on Sept. 13, 1925, said: "Not far in the future will come the new City, one building, devoted to one single business, with a landing roof. The congested traffic problem may be solved from the roof before it is solved in the street."

Only responsible authorities (in good faith), no research or inquiries, etc., will be considered by us.

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U.S. CIVIL AIRWAYS STATISTICS, JANUARY-JUNE, 1927

THE following is a tabulation covering scheduled flying over airways in the United States. In addition to scheduled operations over airways, several carriers handled passengers for short flights about the field, etc., which statistics are included in a second tabulation. While most contract air mail routes have been carrying passengers who request passage, but eight have published passenger rates. The average passenger mile is 13 cents plus. No data is available on passenger miles.

The three private Ford express routes carry only Ford goods. The express matter carried in this period on the St. Louis-Chicago route was mostly flood relief supplies and does not indicate possible normal traffic.

Beginning September 1, 1927, operations were inaugurated on a national scale under contracts between air mail contractors and the American Railway Express Company on five routes. This marks the advent of an actual air express system. The average pound-mile rate is \$0.0015.

ROUTES	Miles flown scheduled trips (f)	Passengers carried	Mail carried pounds	Express carried pounds	Air mail income
San Francisco-New York (a) (b) (c)	913,031	none	212,976	none	(g)
Chicago-New York Overnight (b) (c)	233,417	none	88,048	none	(g)
New York-Boston (M) (c)	53,020	231	8,164	100	\$24,488.06
St. Louis-Chicago (M)	63,987	2	16,999	21,651	43,024.77
Dallas-Chicago (M) (c)	343,708	59	51,274	none	153,654.36
Los Angeles-Salt Lake City (M) (c)	204,972	147	88,746	20	206,235.93
Salt Lake City-Pasco (M)	147,340	none	22,612	none	67,538.63
Detroit-Cleveland (M) (d)	78,144	none	826	646,599	894.80
Detroit-Chicago (M) (d)	81,732	none	4,741	364,099	5,120.85
Los Angeles-Seattle (M)	212,454	318	31,420	none	89,374.89
Chicago-Minneapolis-St. Paul (M)	88,320	none	11,418	none	31,400.70
Cleveland-Pittsburgh (M) (e)	16,959	4	4,674	none	14,020.87
Pueblo-Cheyenne (M)	72,400	2	15,606	none	46,819.49
Pittsford-New Orleans (M)	25,920	none	37,898	none	16,208.10
Seattle-Victoria (M)	10,764	11	25,886	none	14,200.00
Detroit-Buffalo	30,956	none	10,105	(b)	
Detroit-Grand Rapids	41,300	1,087	none	2,404	(a)
Louisville-Cleveland	23,940	30	none	244	(a)
TOTALS	2,642,364	1,891	621,236	1,045,222	\$773,280.95

- Airways Mileage—9021.
 (M) Air Mail contract routes.
 (a) Government operations between San Francisco and Chicago ended June 30, 1927. Passengers and express now carried by the contractor.
 (b) Both night and day service between Chicago and New York started under private operation September 1, 1927.
 (c) Commercial routes operating without mail contract.
 (d) Private as to express.
 (e) Began only on April 21, 1927.
 (f) Obviously additional miles were flown on uncompleted trips but it is not possible to account for such mileage.
 (g) Government operated.
 (h) Private express line, no mail contract; began operations March 28, 1927.
 (x) These lines have express contracts with American Railway Express Company.

The following tabulation is of *miscellaneous* flying by airway operators—taxi, test, photo, ferry, sightseeing hops, etc.

Routes	Miles	Passengers carried	Express carried
San Francisco-New York	92,946	—	—
Chicago-New York Overnight	26,268	2,200	0
New York-Boston (M)	88,720	2,105	1,690
St. Louis-Chicago (M)	31,018	0	0
Dallas-Chicago (M)	1,681	4	0
Los Angeles-Salt Lake City (M)	9,245	0	0
Salt Lake City-Pasco (M)	2,900	0	0
Detroit-Cleveland (M)	2,500	0	0
Detroit-Chicago (M)	8,280	34	0
Los Angeles-Seattle (M)	0	0	0
Chicago-Twin Cities (M)	3,044	21	0
Cleveland-Pittsburgh (M)	800	180	0
Pueblo-Cheyenne (M)	0	50	0
Pittsford-New Orleans (M)	0	0	0
Seattle-Victoria (M)	11,220	2,411	0
Detroit-Grand Rapids	83,625	1,300	260
Louisville-Cleveland	no data	0	0
Detroit-Buffalo			
TOTALS	362,249	8,305	1,950

Recapitulation

The total volume of civil flying in the United States during the first six months of 1927 is set down below:

	Miles	Passengers (b)
Scheduled flying by airway operators	2,642,364	1,891
Miscellaneous flying by airway operators	362,249	8,305
Air Service operators (a)	9,373,320	385,450
Private owners	unknown	unknown
Manufacturers	unknown	unknown
Contests, races, and meets	unknown	unknown

TOTALS..... 12,377,933 395,646

(a) Estimated. Half of the estimated volume for 1926 is herein used.

(b) Includes those both for hire and free.

From the foregoing statistics the following information is obtained as to air mail contractors only:

Average income per pound mail carried	\$2.41
Average income from mail per airplane mile	.55
Miles flown by mail contractors on schedule	1,399,720
Mail carried, pounds	320,212
Passengers carried	774

The following tabulation of income is derived also from foregoing statistics for the thirteen mail contract routes only, operating the first half of 1927:

Mail Income	\$773,281
Passenger Income (a)	70,140

Total..... \$843,421

Miles flown on schedule	1,399,420
Income per airplane mile	\$60

Passenger income. (a) Figured at 13 cents per airplane mile, estimating all passengers as paying and flying the entire route, actual passenger miles not being known.

In addition to mail and passenger incomes on actual airway operation are the sums received for taxi, sight-seeing and miscellaneous air service operations and express.

The airway operations, including the Post Office, for the first half of 1927 completed 4587 out of 5272 trips scheduled, an efficiency percentage of 87. Data was not compiled prior to January, 1927.

Of the 3272 trips scheduled, 179 were not started and 506 were uncompleted.

Failures to start or complete 685 trips were ascribed to the following causes:

Weather and darkness	623
Structural failures	4
Mechanical failures	28
Shortage of equipment	30

Routes	Trips Scheduled	Completed	Uncompleted	Not Started
San Francisco-New York	362	182 (a)	180	0
Chicago-New York Overnight	362	306 (a)	34	22
New York-Boston (M)	302	241	20	41
St. Louis-Chicago (M)	240	231	9	0
Dallas-Chicago (M)	362	287	75	0
Los Angeles-Salt Lake (M)	362	348	13	1
Salt Lake City-Pasco (M)	332	278	26	28
Detroit-Cleveland (M)	574	528	0	46
Detroit-Chicago (M)	306	294	1	11
Los Angeles-Seattle (M)	310	198	112	0
Chicago-Twin Cities (M)	258	230	22	6
Cleveland-Pittsburgh (M)	142	133	7	2
Cheyenne-Pueblo (M)	362	362	0	0
Pittsford-New Orleans (M)	324	324	0	0
Seattle-Victoria (M)	142	138	4	0
Detroit-Grand Rapids	306	295	1	10
Louisville-Cleveland	74	70	2	2
Detroit-Buffalo	152	142	0	10
TOTALS	5,272	4,587	506	179

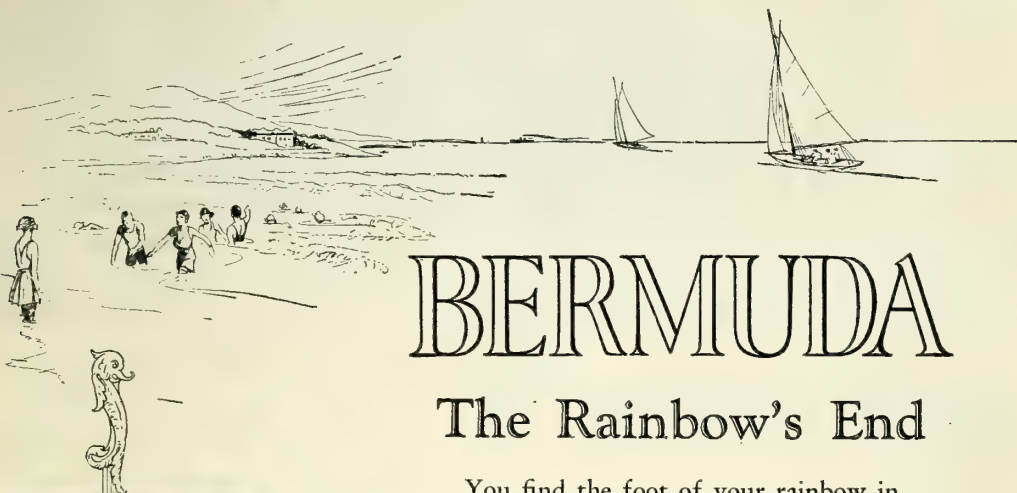
(M) Mail contractors.

(a) All trips on which mails were trained over any portion of the trip are counted as incomplete, but the mails were advanced practically in all instances.



A group of Laird airplanes used for air mail and other commercial service.

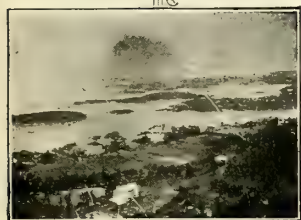
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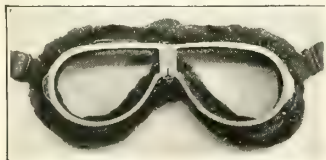


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MASON CITY'S AIRPORT

BY RALPH W. CRAM

MASON CITY, in northern Iowa, on a direct line from the Twin-Cities to Des Moines, is ready to bid for its share of air commerce which can land on the fine airport which it dedicated with a big air show last month.

The new Mason City Airport consists of 80 level acres, surrounded by several hundred other acres just as level, permitting its expansion whenever desirable. It was made possible by the civic patriotism of the American Legion Post, which leases the field. The Post built a Butler steel hangar on the field and presented it to the city under an agreement under which the Chamber of Commerce will soon share the maintenance expense.

Dedication of the field was made a big event for northern Iowa. Assistant Secretary of War Hanford MacNider went there in an army tri-motor Fokker, for Mason City is his home town. Major Thomas G. Lanphier took twelve pursuit planes from Selfridge Field for formation flying over the field, and the Army's biggest dirigible, the RS-1, made a landing at the field, the terminus of the longest trip to the north that a blimp has made from Scott Field.

Colonel Charles A. Lindbergh was having an off day, for the dedication was on Sunday, and he was at Sioux City, only 150 miles away. So he made a trip over, flew a pursuit plane in formation, and was a guest for the rest of the day at Secretary MacNider's cottage at Clear Lake, near by.

ENGINEER'S MEETING
ON AVIATION SAFETY

A MEETING to discuss "Safety in Aviation" will be held at the Bellevue-Stratford Hotel in Philadelphia on October 18, 1927, under the auspices of the Engineers Club of Philadelphia with the coöperation of the Aero Club of Pennsylvania and the American Society of Mechanical Engineers (Philadelphia Section).

In the morning those attending will visit Navy Yard Flying Field where there will be exhibition flying followed by a general get-together luncheon at the Engineers Club. The afternoon meeting will be held at the Bellevue-Stratford; a formal dinner will be served in the Ball Room at 7 o'clock, followed by addresses from prominent speakers, including: Hon. William P. MacCracken, Mr. Harry Guggenheim and Commander R. E. Byrd.

Those who will take part in presenting papers and discussion during the afternoon and evening sessions will be: Lieut. James H. Doolittle, Com. B. C. Leighton, Capt. H. C. Richardson, Lieut. Edwin E. Aldrin, Major C. M. Young, Col. Paul Henderson, Mr. J. Brooks Parker, and Capt. Emory S. Land.

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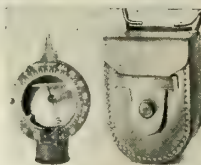
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FOREIGN AERONAUTICAL NEWS IN BRIEF

Compiled from the foreign aeronautical press, the Automotive Division and the Transportation Division, Bureau of Foreign and Domestic Commerce

ENGLAND

ON August 25th, British civil aviation celebrated its eighth birthday. During the past eight years British Air Services have flown approximately six million miles, and have carried 90,000 passengers on regular services.

RATES are reduced 25 per cent on Cairo-Basra Service of Imperial Airways, Ltd., which have announced substantial reductions in charges for excess baggage. The new passenger fares from Cairo to Bagdad and Basra are £32 and £41 compared with £41 and £51 respectively for the old fares.

A freight service has been established and some of the quoted rates per pound are: Cairo to Gaza, 7d; Bagdad, 2s 10d; Basra, 3s 7d.

THE Councils and general bodies of Members of the Royal Aeronautical Society and the Institution of Aeronautical Engineers having come to an agreement upon the terms of amalgamation, and the two bodies are now getting together to put the agreement into practical effect.

THE R-38 Memorial Prize, offered annually for the best paper received by the Royal Aeronautical Society on some subject of a technical nature in the science of aeronautics, has been awarded this year to Wing Commander T. R. Cave-Browne-Cave, C.B.E., A.M.I. Mech. E., A.M.Inst.N.A., F.R.Ae.S., for his paper entitled, "Safety from Fire in Airships." The paper will be published in the October number of the Journal of the Royal Aeronautical Society.

THE Daily Mail has been delivered to Belgium with remarkable regularity throughout the summer. The papers are rushed to Lympe in the early morning, and from there Captain Stack, A.F.C., has flown them across to Ostend, arriving punctually at 6:20 a. m.

CANADA

A NEW air service was inaugurated in Alberta on August 7, when the first passenger trip by plane of the Lethbridge Commercial Airways, Ltd., was made between High River and Lethbridge. Commercial flights will be arranged between Lethbridge and Waterton Lakes.

UNIVERSAL AIR INDUSTRIES, LTD., with head office in Regina, Saskatchewan, received a charter from the Dominion Government on July 4 permitting it to establish and maintain regular services of aircraft of all kinds and to enter into contracts for the carriage of mails, passengers, freight, etc.; also to acquire and operate air ports and to manufacture, export, import and act as agents for aircraft and motor vehicles. The capital stock of the new company is \$50,000 divided into 50,000 shares of one dollar each.

AIR mail service between Quebec and Montreal was inaugurated on September 16th. Pilot Graham of the Royal Canadian Air Force of Ottawa took off from the St. Lawrence river with 500 pounds of mail from the Canadian Pacific liner, *Empress of Australia*, and flew it up to Montreal, 342 miles distant.

CANADIAN AIR LEAGUE

By James Montagnes

MAJOR-GENERAL J. H. MACBRIEN, late chief of staff for Canada, as provisional chairman of the proposed Canadian Air League addressed some 250 war time aviators and a scattering of air students at the King Edward Hotel on September 19th with regard to the formation of a National Aeronautical society.

Present at the dinner were not only well-known Canadian airmen, including Roy Brown who brought down the German ace Richthofen, the Mayor of Toronto, the At-

torney-General of Ontario and other notables, but a number of American airmen, among them Lieut. Edwin Ronne, director of the Buffalo Airport, Major John Berry, Air Director of the City of Cleveland, and Harry Wiltshire of the Canadian Branch of the Ford Motor Company. Captain Earl M. Hant, president of the Toronto Aeronautic Association, presided. This body has a membership of nearly 275.

Major-General MacBrien in outlining the proposed Air League stated that it would be part of the Air League of the British Empire, that among its activities would be the formation of an air reserve, the promotion to the fullest extent of commercial aviation in Canada, stressing that at present there is not a regular air route in the country, except for forest patrol work. Aerial research, experimentation and manufacture would be stimulated through the League, and the public given practical insight in air travel. A junior branch would also be formed, he intimated. The formation of this League is but two weeks old, and already great activity is being shown in Toronto, Montreal, Winnipeg, and Regina.

In Montreal there is already a Light Airplane Club with 500 members having access to a government airdrome now under construction which is two square miles in extent. Airports will be completed in London and Windsor before spring. That Canada was at present far behind in aerial progress was forcibly proclaimed by the speaker, and that the country should do something to promote this new transportation system now was his feeling and that of the many war time aviators present.

THE Association of Canadian Aviators was organized recently by pilots who came from all parts of the Dominion to London, Ontario, applying to be chosen pilot on the London, Ontario to London, England flight, backed by Charles A. Burns, president of the Carling Brewery.

Upon their return home, these applicants organized dinners and re-unions of flying men in their districts to discuss the idea of a dominion-wide club or association of Canadian aviators and it was received with enthusiasm. Their aim is to promote the sport of flying and to educate the lay-mind to the safety of aviation and encourage civilian flying by fostering light airplane clubs.

The association will have its headquarters in London, Ont., with branches in most big centers. Commodore Ericson of the United States will act as liaison officer.

WITH the development of transoceanic flying the new airport at Harbor Grace is destined to play an important part for refueling and repairing before proceeding eastward or westward. It is situated on a hill and in clear weather is visible from the air at a distance of 30 miles. The runway is complete and ultimately hangars and lighting facilities will be provided.



King Albert, in cockpit, is one of Belgium's most enthusiastic fliers.

Acme.

GERMANY

A SUMMARY of the 1926 report of the Deutsche Lufthansa is as follows:

The Deutsche Lufthansa was organized January 6, 1926, with a capital of 50,000 RMks. for the purpose of unifying the German air transport service.

Regular service was inaugurated on April 6, 1926 and on June 15, 1926, the capital was increased to 25,000,000 RMks.

A network of airlines was established which increased the total annual mileage flown from about 4,950,000 kilometers in 1925 to 6,140,000 in 1926.

The total number of passengers carried shows an increase of about 50 per cent over the number carried in the preceding year, and the total amount of freight and mail carried, an increase of about 150 per cent.

At the beginning of the flying period, the company had about 100 planes. By the end of 1926 this number had increased to 120, of which 31 were large commercial planes. The old-type planes that had been taken over were utilized for special purposes, such as instruction flights and aerial photography. The personnel was increased from a total of 934 men (458 employees, 476 workmen) to 1,527 (564 employees, 963 workmen) at the end of 1926.

LUFTHANSA BALANCE SHEET

(As of December 31, 1926)

Assets	
	RM
Capital to be paid in	3,037,716
Aircraft	7,198,482
Engines	4,128,347
Machines, tools, instruments and special flying equipment	443,789
Airports and equipment	793,698
Trucks	165,713
Office equipment	137,993
Material and fuel	3,582,549
Claims	6,114,043
Cash and bills of exchange	39,017
Cash in bank	799,390
Shares	1,084,690
Contingent obligations, RM 5,943	

RM 5,943-27,525,430

Liabilities	
	RM
Capital stock	25,000,000
Acceptances	500,000
Obligations	2,017,311
Contingent obligations, RM 5,943	
Balance	8,119

RM 5,943-27,525,430

PROFIT AND LOSS STATEMENT

(As of December 31, 1926)

Debit	
	RM
Expenses	1,247,862
Depreciation	5,666,969
Balance	8,119
	6,922,950

Credit	
	RM
Gross balance	6,922,950
	6,922,950

FRANCE

THE Air Union has reduced their passenger fares 20 per cent for members of the American Legion in Europe for the French Convention. Legionnaires will be required to produce their special passports at the aerodrome of embarkation as a means of identification. Single fares on the London-Paris airline will be: "Earlybird" service, £4.4s.; 11:15 a. m. service and 3 p. m. restaurant service (tea is served free of charge), £5.

FIRST air mail transport in Madagascar was performed successfully on June 15th by Commandant Dagnaux in an army plane. The operation was an experiment to enable the people of Tananarive and vicinity to mail letters which would catch the mail steamer for France at Majunga, some four days after the closing of the regular mail despatch from Tananarive post office. The trip was an excellent example of the ease with which such an aerial mail service could be maintained, gaining nearly a week of time over the usual routing via the port of Tamatave and the railway, which requires a 15 hour railway trip. A hydroplane would, however, be preferable for this service, as it would eliminate the necessity of using a landing field 20 miles from Tananarive. There is a small lake only 2 or 3 miles from the capital that can be used as a hydroplane landing ground. Regular air mail service between Tananarive and Majunga may, in time, become a reality.

THE French Government has published a decree uniting a new line with the existing Latecoere line and fixed a subsidy for the branch line to South America, amounting to 6 francs for each 100 kilograms of weight carried per kilometer. This subsidy of the Government is proportional, taking into account that already granted of 42 and 53 francs per kilogram for planes of 736 and 1,000 kilograms each, and for hydroplanes the subsidy is doubled. Before authorizing the operation of a regular service, the airplanes indicated must make trial flights, under official control, with a velocity of at least 175 kilometers per hour for airplanes and 140 kilometers per hour for hydroplanes.

JAPAN

THE Japanese Bureau of Aeronautics has an appropriation of 1,216,796 yen (\$572,867) for the present fiscal year. Of this amount 371,000 yen is allocated for subsidies. The balance of 845,796 is to be expended on the following project: "Purchase or lease of flying fields at Tokyo, Osaka and Fukuoka; improvements to above flying fields, including hangars; and establishing three land marks or reference marks for flyers between Tokyo, Osaka and Fukuoka. The proposed budget for the coming fiscal year will include provisions for: establishment of five weather observing stations, to include one at Hakono and one at Ibukuyama; communication facilities in connection with commercial flyers; and establishment of four aerial custom houses, including one at Nagasaki."

SOUTH AMERICA

THE Light Plane Flying School has recently been established in Buenos Aires by a British pilot and his associates. It is believed that this concern will sell the De Havilland Moth plane in Argentina and in addition will train pilots and maintain and shelter private planes for their clients. Tuition rates are reported as 1,200 pesos (1 peso —\$0.425) for a course of 10 hours of dual flying and two hours solo. Additional solo flying will be given at the rate of 50 pesos per hour plus the cost of gas and oil.

THE Aero Lloyd Brasileiro, a company organized in Sao Paulo on June 23, 1927, has proposed plans to establish a weekly aerial service, both ways, between Recife and Rio Grande do Sul, stopping at the principal coast cities, with a special connecting line between Rio de Janeiro and Sao Paulo. All material, technical service, etc., including pilots for initiating the service, will be furnished by the Junkers-Flugzeugwerk A. G.

A BRAZILIAN prize for round-trip Lisbon-Rio de Janeiro Flight is proposed in a bill before congress which would offer a prize equal to \$120,000 to Brazilian or Portuguese flyers making the first round-trip with stops at Lisbon, Porto Praia, Pernambuco and Rio de Janeiro, within 96 hours, and with a plane and motors of "Latin" manufacture. It is reported that two Brazilians will attempt the flight for this and an Italian prize in an Italian plane.

REPRESENTATIVES of the Spanish Colon Company which plans to run a Zeppelin line from Seville to Buenos Aires via Brazil, have been in conference with the Brazilian government. Dr. Eckener, who was received by President Washington Luis and other Brazilian officials, stated that he was very satisfied with the results obtained in Brazil. He has chosen a suitable landing place in the bay of Rio de Janeiro and has obtained the necessary support of the authorities. The company plans to start regular service in October, 1928, making the trip from Seville to Rio de Janeiro in three days.

IN connection with various projected air routes, S. Paulo, the capital of the richest State of Brazil, will become an important aviation center, especially for airlines running from the coast to the interior of the country. A modern airport has been built in S. Paulo and preparations are being made for the establishment of factories.

COUNT PEREIRA CARNEIRO, owner of an important Brazilian steamship line, recently brought two Dornier Wal seaplanes back to Brazil from Germany for the purpose of organizing a regular air service between Rio de Janeiro and Pernambuco in coöperation with the German Kondor Syndicate. This syndicate now operates a line in Colombia and is interested in the Brazilian aviation company exploiting the air route from Rio de Janeiro-Rio Grande do Sul

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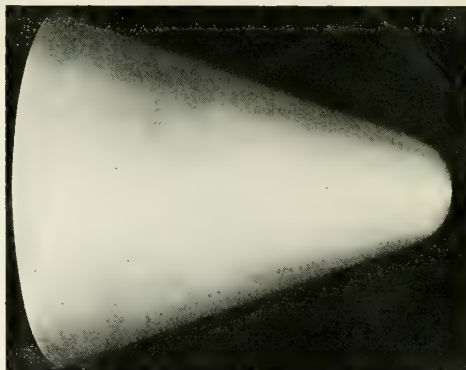
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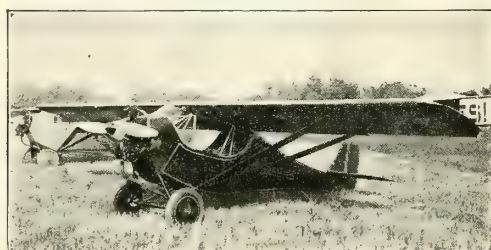
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AERO DIGEST will award a prize of \$5 each month for the best humorous contribution published. Only those pertaining to the aircraft field will be considered. Address the "Picked From The Air" Department, Aero Digest, 220 West 42nd Street, New York, N. Y.

Earl K. Parker, Rocky Mountain Airlines, Denver, Colo., won the prize for October.

"We Think He Was English"

Air Traveler: "Do you sell paw-sage to Salt Lake City?"

Chief Pilot: "No, sir, we don't operate a plane in that direction, but you might take the mail plane."

Air Traveler: "My word, I don't understand you."

Chief Pilot: "Take the mail plane this evening."

Air Traveler: "Do you mean to tell me that you have myle and femyle aeroplanes in this country?"

Chief Pilot: "Listen, and I'll spell it, M-A-I-L plane."

Air Traveler: "How queer now, we speak the same language but don't understand one another."

all right. Here it is in agate type in the ship news column:

'Departures: Junkie monoplane "Miss Nomer." Byrd commanding. Bound for Madagascar with merchandise. Arrived at destination Tuesday night. Two hours overdue.'

City Editor: O. K., fellas—just so we got it covered.

* * *

For Goodness Sake!

"Girl Bent on Atlantic Hop."—Headline. Well, everybody predicted something awful would happen to her, although they didn't exactly think it would come to that.

* * *

A delivery of typewriters was made the other day by dropping them from an airplane. "Maybe," says the Office Stenographer, "that's what's the matter with mine."

—H. I. Phillips, *Courtesy of N. Y. Sun.*

"I regret," Mother Earth probably feels like saying to Byrd and other aviators, "that I have but two poles to give my fliers."

—*Detroit Free Press.*

IT WON'T BE LONG NOW

(Time: 1928)

City Editor: Say, Bill, when is Byrd flying that load of sewing machines to Madagascar?

Bill: Why, he left two days ago. I left a note on your desk telling you that the Clarion Sewing Machine Company called up. They said Byrd would carry forty sewing machines to the stricken natives, and would start his transoceanic hop early Monday morning.

City Editor: Gee, we shoulda had something on it. Why didn't you write a couple of paragraphs so we'd be covered?

Bill: Well, I'll tell ya, boss, it looked like a lot of publicity to me. Byrd's O. K., of course, but if the Clarion Company wants newspaper space, I say let 'em pay for it.

City Editor: I know, Bill, but we might have worked up a feature story out of it, and—

Ship News Editor: Will you guys stop chawing the beef about Byrd leaving for Madagascar last Monday? I got it covered

Valuable Precedent

"Listen," remarked the exasperated driver over his shoulder, "Lindbergh got to Paris without any advice from the back seat."

—*Detroit News.*

Nervous Passenger (in aerial taxi, about 5,000 feet up): "W-w-what are you laughing at, driver?"

Driver: "I'm just laughing at the superintendent. About this time he'll be searching for me all over the lunatic asylum."

* * *

Boss of Airplane Factory: "Well, did you read the letter I sent you?"

Former Employee: "Yes, sir. I read it inside and outside. On the inside it said, 'You are fired,' and on the outside it said 'Return in five days,' so here I am."

—*Pratt & Whitney "Bee-Hive."*

We are in a position to deny the report that the man found in his birthday clothes on Mayor Walker's front doorstep the other early morning was Grover Whalen waiting to welcome his honor back. Every one should have known it wasn't Mr. Whalen. When he is welcoming, Mr. Whalen always wears a top hat.

* * *

The transatlantic flights and other items have left the Chinese armies so far behind on first-page publicity that it's about time they started playing double-headers.

* * *

Dudley Field Malone wants to send a battleship over to Europe to bring Mr. Levine home. And the Government might add a regiment of marines for him to fight with.

* * *

But if an ocean flew over an airplane that would be news.

—*Russel Crouse.*

Courtesy N. Y. Evening Post.

Charles Lindbergh's engine never missed a beat, but that is more than can be said of the poetry written about him.

—*Indianapolis Star.*

No reason why Fitzpatrick should have turned back on account of rain and fog! He had his MacIntosh along.



Courtesy N. Y. American.

And they are still at it!

There is no stunt in this circulation!

THE sworn statement of Aero Digest as of June 30th, showing an average net paid circulation over a period of six months of 26,363 represents the largest distribution and the most powerful advertising force in the aircraft field. AERO DIGEST is read by all who are active in the great development of aeronautics in this country.

Every advertisement in this October issue has been distributed to over 35,000 readers who have bought AERO DIGEST. In this great air-minded audience are included the entire aircraft industry, the men who are actually planning to own aircraft, the men behind the national airport movement, officials of the U. S. Government.

The executives of the aircraft industry, on whose recommendations purchasing orders depend, all read

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CHEMISTRY AND AIRCRAFT

(Continued from page 418)

fittings is the rule rather than the exception. Some metals are not easily and successfully soldered so it is first necessary to find a plate which can readily be applied to overcome this difficulty. The development of corrosion resisting platings is progressing very rapidly at the present time and offers many opportunities.

The use of light alloys and alloy steels has made tremendous strides of late and all must be thoroughly investigated for physical properties and chemical uniformity before going into general use. Stainless steel is forging rapidly ahead and considerable comparative work has been done and data obtained on various makes and types. Advantages as to welding, machine ability and general working qualities as well as corrosive resisting properties must all be ascertained.

Corrosion prevention is the keynote of research in many industries to-day and numerous samples of rust preventatives and removers are received. These range all the way from paints and lacquers to oils, waxes and greases and then to such processes as electroplating or electrolytic (anodic) treatment.

A general comparison of all these materials or processes is secured by means of a 100-hour exposure to the salt spray.

Then all fractures of metals must be carefully studied under the microscope after being properly etched.

There is also a never ending search for soldering fluxes for the various materials which will be less corrosive than their predecessors.

Research development in other lines also stimulates work in our particular field. The increasing use of ethylene glycol as a cooling medium suggested extensive tests on our part to ascertain its applicability to the airplane. The same was true of gasoline and gasoline mixtures.

These are but a few of the numerous problems that confront the chemist in a modern aircraft factory. There are many others which have but an indirect connection with the airplane or its construction. The production of a smoke cloud for ascertaining wind direction when certain air stream tests were recently conducted is an example.

So, in answer to the question "What has a chemist got to do with airplanes", I feel safe in saying that he is playing a very important part in this newest and youngest of industries. In the large airplane plant of to-day where the relation of strength to weight durability and efficiency are the prime requisites, the Chemical Department is a very busy place.

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AIR—HOT AND OTHERWISE

(Continued from page 394)

and peace time activities, they have done nothing except to get into more and greater trouble.

He is horrified by the sad thought that our Government's fool advisers should have been able to convince old Uncle Sam that any man can fly and carry bombs, and he is especially distressed that anyone ever should have lost his life while trying to accomplish this. The sinking of a naval ship with all on board is quite o.k.; an air-accident is just damned nonsense. The newspapers, he thinks, should refuse to carry articles about men who claim that they have ever kept above the surface of the earth in heavier-than-air machines. The newspapers are crooked, anyway, or mere fools for even mentioning aviation and the aviators. He thinks that the fatalities which have attended flight should never be forgotten for a moment, and, evidently, that flying is too dangerous for naval men and soldiers. Having enlisted for the purpose of living lives of ease and safety, they never should be asked to take such risks as flying may entail. He lists many of the gallant dead (how they would hate such effort to make propaganda capital out of their names!) and intimates that as there is risk in flying America must never fly.

He speaks of flying as if its whole appeal is that of "romance", neglecting the air mail, the hundreds of thousands of people carried this year in safety as contented passengers desirous of conserving time, which is the chief ingredient of the life God gave us, and the fact that solid businessmen and companies like Henry Ford and the Guggenheims, the Standard Oil and American Express, are going in for flying with quite serious minds, clear consciences and the conviction that by doing so they serve their own interests and the whole nation's.

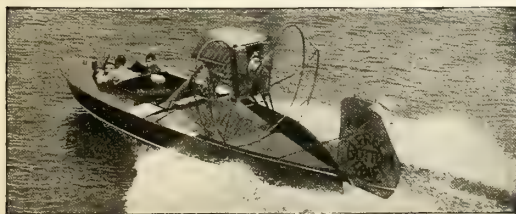
He denies that air raids were effective during the World War, thus neglecting the straight evidence of history and accepting the panic-stricken testimony of those officers who see themselves in danger of displacement by men trained in the progressive arm.

One of my close friends was present in London during nearly every raid and in Paris during several. He read this article of General Harbord's (he knows and likes the General) and his comment was that he had seen a nation dazed by the grim horror of air raids, that he had helped to pull the dead out of the ruins and that the book is obviously rot.

Now let us think about the meaning of all this to the Air Klan.

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HASKELITE, the blood-glue plywood, was used widely in the Stinson-Detroiter monoplane which Brock and Schlee flew 12,295 miles from Newfoundland to Tokio. They did not carry out their original purpose of flying around the world but they did make one of the most successful long-distance flights in aviation history.

HASKELITE was used for cabin flooring, rib constructions, false ribs, under-finish, and in the wings.

HASKELITE has already been around the world by air, in the army's Douglas Cruisers. It was in the planes used by Lieut.-Commander Read, Lindbergh, Byrd, Maitland, Goebel, and countless other air pioneers.

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review by the General contains unmistakable internal proof that the larger organizations who profited by that manner of war contracts which naturally will not be furthered, next time, by developed aviation, are still determined to keep hammering against the preparation of the two great English-speaking peoples for defense by air, because such preparations must mean financial loss to the old-time beneficiaries of old-time building programs. They won't get far in fighting aviation over in old England where the buzz of hostile propellers has been heard. They may get farther here if we do not watch out.

General Harbord's subtle efforts to get the American Legion to select anti-aircraft delegates to the Convention in Paris involved much work on his part, prior to the date when the ex-soldiers got away from France. In war the anti-aircraft guns were usually ineffective. It is comforting to think that an anti-aircraft delegate perhaps may be no better than an anti-aircraft gun.

But it may be a generation before these enemies of progress, entrenched in the high places and ponderously financed, even begin to stop their fight against a national American air development. They pass Lindbergh and Chamberlin over with a wave of the hand and call their achievements "luck".

Fortunately the crowds now listening to Colonel Lindbergh as he flies about the nation urging air development are also waving hands—theirs not in dismissal, but in enthusiastic greeting and applause.

This Neon person solemnly declares that all the many air raids on London killed "only 1,413."

The statement, as I chance to know, is not exactly accurate. Statistics have been "gathered" there, as here, by old line military officers, who see air-fighting injuring their prestige. But a thousand women and children are a lot and that friend of mine who happened to be present during every London raid describes a psychological effect upon the population which did not help the Allies win the war.

London's virtual despair, he says, due principally to air raids, was one of the tremendous reasons why the Allies were delighted when America "came in." Morale was frankly gone among civilians—and without civilian morale behind them soldiers never have been fit to fight.

It has been a long, long time since sheer self-interest upon commercial lines has shown in America a face so vicious looking as that which the anti-aviation forces now protrude. The fierce barrage, of course, is stimulated by the attention which the press is giving to aviation and the feeling which the public naturally, in consequence, has in its favor. The fact that the air haters of the Army and the Navy, the ancient bureaucrats and the old line officers, are getting to be experts in anti-aircraft offense is made particularly manifest by the book, "The Great Delusion," with General Harbord's review. They are desperately seeking shelters which they hope may be aerial bomb-proof and are getting notably hysterical as they repeatedly see the best that they can find demolished by events—events which drop down from the air above and explode with startling detonations.

I DON'T remember how to spell the words which at that ancient feast of Biblical description were suddenly writ plain upon the wall and terrified the dinner party, but I remember that they worked. There are now other signs. The revelers in swivel chairs and comfortable jobs requiring such technique as was completely understood in 1812, are also gazing at handwriting on the wall and also terrified. They are listening to the people's voices

and they sound a good deal like the roar of airplane propellers, evidently. The new plan of national defense provides:

"In ordinary operations the ranking officers of the service having the paramount interest assume command of the unified forces. In major operations the President, as Commander-in-Chief of all the armed forces, delegates his authority to some officer of high rank whose duty it is to coordinate the functions of the Army, Navy and Air Forces."

This is a grudging step toward unification of all air effort under one department of national defense, exactly that which has been urged by AERO DIGEST and about that which was suggested by General William Mitchell, whose patriotism won him a court-martial. In case of naval need Army airplanes will operate under naval command. In case of Army need the Navy's planes will be commanded by the Army.

The new plan of defense coordinates all armed forces in preparation for emergency, so that they may be unified without delay and operated under the direction of one agency without confusion. The order takes effect immediately.

The situation is quite clear. Realizing that the organization of a Department of National Defense, to supersede the present stupid and old fashioned system, is an unavoidable necessity, and that Congress will demand it, the Army and Navy chiefs have worked out this precious scheme so that when they are pulled to the carpet before Congress they may say that they already have all that a Department of National Defense would give. It is a clever side-step to avoid the inevitable blow which the organization of a real Department of National Defense, coordinating all the arms and giving each its proper value, not subordinating air, must deal to the old timers.

If such procedure is recognized as necessary when attack comes, why should it not be organized in time of peace? Why wait to be hit on the nose before you get yourself in shape to strike an answering blow?

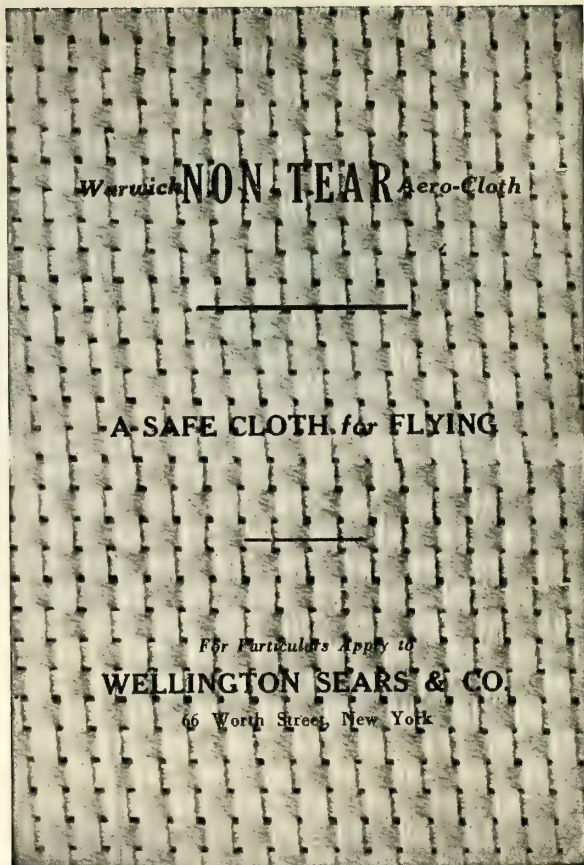
"In time of peace prepare for war," said Washington.

The comfortable office warriors down in Washington have added something to this maxim, making it "In time of peace get ready to prepare for war."

And airplanes, although "Neon" and General Harbord seem to doubt it in their hearts while grudgingly admitting it on paper, already have flown over the Atlantic!

AERO DIGEST is far from even partially discouraged. Every nervous movement of the old gang leaders down in Washington brings comfort to our heart. A Department of National Defense is coming and is coming in the next Congress. This cannot be otherwise, considering the air activities of recent months. That these should have included disappointments and disasters we regret. As we get older at the science and wiser, we shall learn the wisdom of a reasonable caution in this activity as we have learned it with regard to others.

The advocates of the old order cry aloud that air effort is costly. We do not hear them mention the extravagances that would be eliminated if, wisely, we merged two expensive secretaryships into one really worth while authority, and stopped the madly costly rivalry of Army with the Navy and of both with the Air Force. What is needed down in Washington among our gallant fighting politicians is just a little patriotism spelled without the Y. Spelled paYtriotism, there is a suggestion in the word that we of AERO DIGEST and 99,999,999 other Americans much



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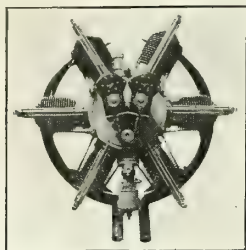
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H. L. BROWNBACK
NORRISTOWN, PA.

dislike.

The American Legion has put through a resolution calling for a Department of National Defense. The dough-boys know!

WHEN, this summer, Calvin Coolidge was pulling trout out of the western mountain streams, one could imagine him as wishing that the fish were battle-ships. He had called the conference at Geneva for the purpose of decreasing the burden of the world imposed by the mad building and expensive upkeep of such costly toys, each nation building only because the others did, all able to eliminate it if all others would agree to that. Coolidge knew and knows the whole world is the victim of a condition which grew up through human ignorance and is maintained because the moment it is altered in the general direction of common sense and human decency a great number of vast fortunes will slip into the discard and large important special interests will fade away.

Coolidge asked a total naval tonnage of 300,000 tons, but that shocked Great Britain. There the naval personnel is vast and powerful and the effect was as if Henry Ford had asked Detroit if it did not wish to limit automobile building. Multitudes would lose their jobs, and many of these multitudes are made up of men born to a great social, political and economic tradition, established by their forebears, generations gone, when on the Navy really depended England's safety.

The fighting airman has no professional geneology. He has slight traditions. He is a newcomer. The deeply entrenched naval aristocrat, stupid though he may be through failure to progress with other people, stiff though he may be through too much salt starch in his system, not only felt it safe to frown at but to sneer at him. So England, of course, rejected Calvin Coolidge's idea.

Great Britain has some logic, too, behind her feeling that her Navy must be vast. Her Empire girds the earth. As long as men are quarrelsome and greedy she must have protection for its furthest corner. She understands the Navy and she does not fully comprehend the airplane. There exists that mighty personnel with pull; there exists that vast investment with its economic influence; there exists familiarity.

At the Conference which our President called, the English delegates were naval or military men. The delegates we sent were naval or military men. For such men to limit armament would be as probable as for grocers to urge fasting. Every battleship eliminated would leave some of them without a deck to stand on. Every Army post abandoned would inevitably mean that some of them, beautifully dressed up through generations of uniform design and adaptation, would have nowhere to go. Hugh Gibson, our diplomatic representative, is a fine fellow and a good diplomat—a term having dangerous meanings which we do not think about when we refer to Mr. Gibson. He plays with the side which seems to be in power.

If the powers that be had had the sense to call an Air Conference, instead of a Naval Conference, Hugh Gibson would have been a veritable silk-hatted Lindbergh. As it was he was a soldier and a sailor. We long for men of vision, bravery and common sense.

If we stick to old traditions we'll get licked some day—and before we die we shall see some of the women whom we love dead at our feet from aerial missiles, the ground as it was in London more than once during the World War strewn with the mangled little bodies of the babes and youngsters we adore.

ASPECTS OF LINDBERGH'S FLIGHT

(Continued from page 397)

pounds and knew the possible distance required to take off. Before the plane left the factory Donald A. Hall, designer of the plane, prepared minute analyses of fuel consumption and possible theoretical performances of the plane and the range was ascertained beyond any doubt. An article on this preparation appeared in the July issue of AERO DIGEST. Lindbergh made two long cross-country flights and verified the accuracy of his navigating and flying instruments, correcting their slight errors upon his arrival in New York. These two long flights enabled him to test his power plant installation and proved that vibrations would not loosen any of the piping connections.

He calmly studied and watched the weather and the impatience of those around who were to stay on terra firma did not influence him and hasten his flight; he left only when he considered the weather was suitable.

His training as an air mail pilot stood him well for many times he had to fly by instruments alone, without sight of land or water. Lindbergh left nothing to chance except the performance of the engine during those long 34 hours, and even in this he had reasonable assurance of security since it was a well tested engine and had proven itself in hard service. Only shortly before an engine of the same model successfully withstood a record endurance flight of more than 51 hours.

Besides these considerations Lindbergh flew his plane at the optimum speeds getting the best possible performance, to attain which requires not only flying experience but also accurate technical knowledge. In order to show how it is necessary to obtain the best land distance performance I have made an analysis of the performance of the Ryan NY-P and will explain some of the intricate problems of long distance flying familiar to engineers.

I am indebted to Mr. Hall for the information he supplied for publication in AERO DIGEST. It confirms my calculations and also shows how Lindbergh found a practical compromise between the theoretical performance and practical considerations.

In long distance flying theoretically one must fly at a speed that will give the greatest possible distance for a given amount of fuel, this speed decreasing with change in the weight of the airplane (due to the consumption of fuel.) At high speeds the power required is maximum and despite the fact that the fuel consumption per horsepower-hour is low, the total amount of fuel consumed is very high. This rate of total fuel consumption decreases with decrease in speed; it is lowest at such speed as the plane is flying very nearly at the angle of its maximum efficiency—that is, when the ratio of its lift to resistance is maximum. In order to accurately obtain the range of an airplane, one must know the characteristics of the airplane—its lift and resistance at various angles of attack, characteristics of the propeller, efficiency of the propeller at different speeds and the brake horsepower required, calculating from this information the specific fuel consumption.

Several methods are available for obtaining the range of an airplane. The method I have used is known as the Breguet method. In order to obtain greater accuracy and make closer analysis of the flight it was applied for four conditions of loading. This was done because the fuel consumption does not remain constant while flying at the same angle of attack but varies according to change in brake horsepower resulting from the decrease in load.

*Space allows only a brief outline of the procedure and



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results of my calculations.

The first phase of the investigation is to obtain the characteristics of the airplane. This is done by following the usual methods. Correction is made for the aspect ratio of the wing by a proper change of induced drag—estimate is made of parasite resistance and its change with change in angle of attack—calculation is made of the down-wash in order to determine the resistance of the horizontal tail. The next step is to calculate the maximum propeller efficiency (knowing the diameter, pitch and type of propeller used) and then to obtain the propeller efficiency curve versus v/nd . It can be proven that the propeller efficiency remains constant throughout the flight, flying at the same angle of attack; that is, that the speed and r. p. m. of the engine vary proportionally. This enables one to plot a curve of v/nd against various angles of attack and so obtain a figure for the propeller efficiencies for throttled flight condition. After this the Breguet equation was applied for four conditions of which the first three were for a fuel consumption of 525 pounds and the fourth of 715 pounds.

The range and endurance were calculated for each of these four conditions for at least four angles of attack, and curves were then plotted. After this a range was chosen which, although not the best theoretical, was considered the best practical range. After the best practical ranges were decided upon, a curve was plotted giving the distance in miles covered against time in hours from start and also the variation in the best practical cruising speed. It is interesting to note how closely the result of the calculated performances corresponds to the record of the actual flight. Lindbergh was in the air approximately $33\frac{1}{2}$ hours. The air distance covered was 3,250 miles. As the average tail wind was about 11 miles per hour (according to various reports)

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the total ground distance was about 3,720 miles, which checks very closely the plotted course distance.

According to some reports, it seems that the decrease in speed over the route as flown by Lindbergh was smaller than assumed here. This may be explained by the fact that in the beginning he probably flew closer to the theoretical speeds.

It is my hope that this analysis of Lindbergh's flight will give added proof that the success of the flight was due to the careful technical preparations made beforehand and the experience and capability of the pilot. To test the plane, instruments, method of navigation, start the flight at the most suitable time, fly without error a plotted course of 3,600 miles and to take the utmost advantage of an airplane at all times during the flight is not luck but science.

ENGLAND WINS SCHNEIDER RACE

(Continued from page 395)

in previous Schneider Cup Races was regarded by many as due to the better fineness of the monoplane as compared to the biplane and engineers favoring monoplane construction thought this to be a proof of the higher efficiency of monoplanes. It seems, however, that a possible use of thinner wing sections in the biplane and better aspect ratio of wings can offset the effect of induced drag which must be expected to be very small at those high speeds.

There are other points of advantage of a biplane, such as higher probable maneuverability on account of shorter fuselage lengths and greater compactness of design.

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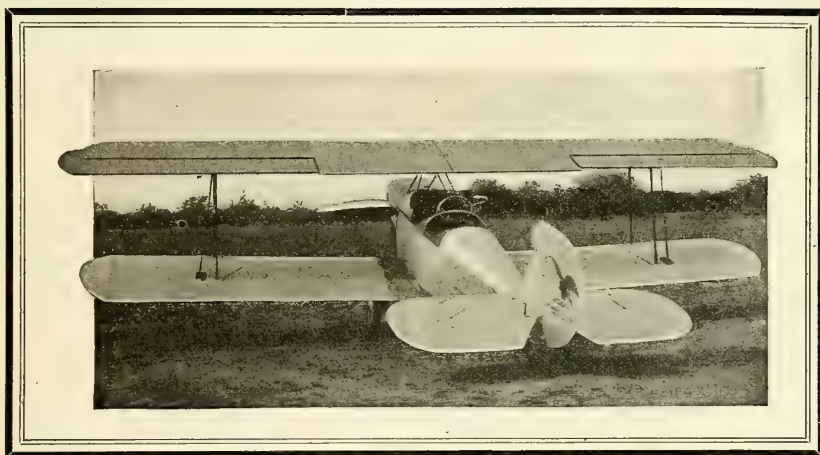
5 gals. new fresh nitrate dope \$8.50, or 25 gals. or more at \$1.40 per gal. or 50 gal. barrel \$65; nitrate dope thinner \$1.85 per gal. or 5 gals. \$8.50. Cotton and linen covers all made up for Canuck, JN4D or Standard; Grade A mercerized cotton 55c yd., or 50 yds. or more at 52 1/2c per 100 yds. or more at 50c. Grade A cotton scalloped tape 2 1/4" wide 5c yd. or \$4.50 per 100 yds.; ordinary 2 1/4" cotton scalloped tape 4c yd. or 130 yd. rolls at 3 1/2c yd.; Rib cord 1c yd. or \$3.50 per lb. ball; linen thread 35c spool; double pointed 10" needle 35c; single pointed 14" needle 50c; curved needle 35c.

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A NOD AND A WINK

(Continued from page 410)

of the race arrived. So did the admiral. He was one of the very oldest admirals the Navy have—and they have some real old ones. Two gobs carried him in and stood him up beside the turtle-racing enclosure.

The bell rang, the barrier was lifted, the turtles bounded forth. There were cheers from the crowd, there were roars from the turtles. Excitement was intense. The crowd was in hysterics—Turko wins!

And the admiral? The admiral was sound asleep. He was quite a standard admiral.

DID you see where Grandma Bennett of Chicopee, 101 years old, flew from Boston to Portland, Maine, re-

cently with Capt. Harry M. Jones? I wonder if we couldn't get her in as president of the National Aeronarcotic Association. I'll bet she'd wake them up down there.

FROM June 11 to August 31 the dirigible *Los Angeles* lay sullenly in its hangar. Nearly three months doing nothing. But the pay of the officers and men went on all the time—"constantly," as Bert Williams used to say—"constantly." And the expenses went on constantly—gas cells replaced, helium repurified and strained through cheese-cloth, everything overhauled. And no flying.

Until the fatal August 31. Then the poor old thing was hauled out to do—what do you think? Well, you wouldn't guess it in a thousand years if you didn't read it. The ship was scheduled to fly over the Asbury Park baby parade. Over the baby parade! The bones of Count Zeppelin, a good old sport who wasn't afraid to fly in his creations, would rattle in their coffin if that news was whispered near them. His ghost would flap its wings frantically at the thought.

And perhaps it did flap its wings. For while the *Los Angeles* was being walked—being walked, mind you!—to its mooring-mast, the rudder fouled a tree. My theory is that Count Zeppelin's ghost thus vented its grievance against the Navy, who couldn't think of anything more useful to do with an expensive piece of property than to fly it above a baby parade. What did they want to do, anyhow? Flirt with the nurse girls? If they wanted to do that, why didn't they walk to the baby parade? If these fellows want to go to baby parades, it would be cheaper for the country to buy them all perambulators, and have the gobs wheel them there. One of them might win a prize, at that. Well, if you weren't in the Big Parade, I suppose the next best thing is to get in the baby parade.

Anyhow, back went the big balloon into her hangar, to be worked on some more. They're working on her constantly. On the 25th of August, after the ship had been walked to its mast, it suddenly cocked its tail in the air and stood straight on its nose. I think, myself, that the ghost of Zeppelin dashed past and in his fury hurled that tail skyward. There were repairs that time—and again on the 31st.

I don't know where they had intended going that time—probably above the old ladies' home. I don't mind that. What I object to is the Navy using their ship to drop naval propaganda on the babies, and probably act fresh with the nurse-girls.

WE end on a religious note this month. Aimee Semple McPherson announces the reorganization of her followers into what she calls "The Four Square Gospel Lighthouse Faith." These interesting people of God will wear naval insignia, and will imitate the Salvation Army, with branches in all cities. Aimee will head the group as Rear Admiral—I don't know where Porter Adams fits in all this. I suppose he's a midshipman.

Hallelujah, brothers and sisters! Hallelulu! Here we have it at last in all its beauty, in all its purity, in all its simplicity—the Salvation Navy. Amen.

EDITOR'S NOTE:

It is with feelings of the gravest concern that we announce that Cy Caldwell has mysteriously disappeared. Shortly after depositing the above article in our office,

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for getting in and out of the seaplane as well as action on water is taken into consideration in building Edo floats. Wide stern of shallow draft makes it possible to back the seaplane right to the beach.

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Contrast this with war time style of float. It was designed for use by expert sailors and the comfort of passengers did not have to be considered. Sharp stern of deep draft prevents you from backing seaplane with such floats near enough to beach. What are your passengers going to do? Jump over water onto narrow, pointed stern, or get scared and walk away?

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FRANCIS J. FIELD, Ltd.
SUTTON COLDFIELD, ENGLAND

he vanished completely, leaving no trace of his presence except a slight aroma of gin. For a few hours it lingered on the air; then it, too, was gone—leaving us only with a memory.

The mystery of his disappearance is heightened by the fact that he still had half a gallon of home-made gin in his study. "I can understand his leaving home," said Mrs. Cy, when interviewed to-day, "but I cannot understand his leaving the gin. He has never done it before. I fear the worst."

That the unfortunate semi-writer and pilot has met with disaster is indicated by the finding of his automobile, a lavender Rolls-Rough roadster, beneath six feet of water at Chicken Point, Long Island. It had been driven, or had been pushed, off the dock. At first it was thought that Caldwell's body might be found under the car, but searchers were disappointed. It wasn't there.

"We are greatly concerned," said Mr. Harry Hokum, of the firm of Hokum and Hooey, public relations counsel for Mr. Caldwell. "His disappearance and the wreck of the car do not worry us—all of our clients disappear and wreck their cars. What troubles us is the fact that Caldwell left his gin behind. That is very significant. It proves conclusively that Mr. Caldwell was not in possession of all his faculties."

That a love motive was behind Caldwell's disappearance was indignantly denied by Mr. Izzy Nutz, purveyor of near-whiskey to the literati. "I know that he is true to me," said Mr. Nutz, who was found prostrated in his alcohol warehouse in the Bronx. "Only last week he told me, 'Issy, I'll never have another bootlegger but you—I'll give you all my trade.' Our friendship was purely platonic and alcoholic," Mr. Nutz told the reporters. "He was just a friend, that's all."

Mr. Hooey also denied that his client was involved in a love affair. "His weakness was whiskey—not women," said Mr. Hooey. "He's outgrown them. Just because he backed a musical comedy and lost \$113,000 and a lot of sleep is no reason to connect his name with that of the leading lady. He was far too young and innocent to know what it was all about. He was only 21—fourteen years ago. To prove to you how innocent he was—his own show opened at the Waldorf Theatre—and he turned up at the Columbia Burlesque. No, he leaves no broken hearts behind him. Some broken bottles—certainly. But no hearts."

Meanwhile the Keystone Comedy Detective Agency, which has been guarding Rene Fonck's plane at Roosevelt Field, is investigating the rumor that Caldwell purchased a ticket for a young lady and put her aboard a train for St. Louis. Miss Fannie Fewduds, the lady in question (?), hostess of a Tenderloin night club, was run to earth in her apartment in Harlem. "Yes," she told the reporters, "he bought me a ticket for St. Louis and handed it to me in an envelope. And when I gave the envelope to the conductor all that was inside was a United Cigar Store coupon. Can you beat that Scotch bird! And I had to walk back from Newark. I can't understand it at all."

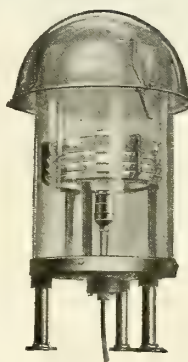
Mr. Scotty Breingan, Suspector of the Department of Commerce, said that he could understand that part of it, all right. But he couldn't understand the buying of the ticket in the first place. "Cy isn't running true to form," he declared. "He must be undernourished, or something. Perhaps he has infected teeth."

That Caldwell had suffered a mental collapse after hearing Elliott White Springs read aloud one of his own com-

positions at a meeting of the Quiet Birdmen was indignantly denied by Mr. Springs. "He was delighted with it," said Mr. Springs. "When I told my audience that I would skip a few pages, Cy shouted, 'Thank you! God bless you, Elliott!' My own theory is that he collapsed after watching Frank Godwin sketch Miss Elder. It takes an iron constitution to watch a scene like that."

Possibly Cy is traveling under an assumed name. He once said to a friend, "What I like to do is to go away once in awhile and use another name, so no one will bother me. Then I don't worry for fear someone is trying to get his hands on my money, or sell me any more airplanes or musical comedies."

The fact that Caldwell was seen last with a Broadway chicken leads to the fear that he met with fowl play.



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THIRTY-ONE HOURS IN A BALLOON

(Continued from page 393)

from Charlotte.

The heat from the ground was very intense; the temperature had increased from 20 to 34 degrees. I dropped special telegrams which we had been given (and several of which I already had thrown overboard) that we were passing over this country.

Our speed, I was now fully satisfied, was certainly better than that of many of the contestants, but our direction had curved too much toward the Atlantic. In addition, we learned later, our greater speed had been accomplished by the danger of keeping us nearer the storm centers which were forming with the approaching night, while more to the west, in a more anti-cyclone zone, the weather was to be ideal the second night and free of all traces of storm.

After 5 o'clock in the afternoon, the balloon we had sighted had disappeared.

After maneuvering at a low altitude, I regained quite rapidly our former zone of balance. At half past 7 in the evening, we were at 3,850 meters with a temperature of 10 degrees. The descent and the sunset had cost us dearly. Our precious ballast had been greatly reduced; nearly 650 kilos had been sacrificed. There was a storm center forming on our east; it was a question of letting it out-dance us.

And so the second night began. My radio set did not pick up any station. We got only static. At the end of an hour and a half, despite the numerous lightning flashes that we saw, I decided that the storm center had moved away toward the southeast.

Life aboard continued normally; we took regular nour-



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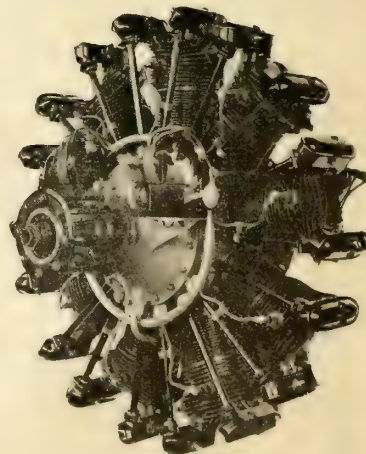
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ishment of mineral water and bananas. I was firmly decided to hold out at least until daybreak and until reaching the Atlantic ocean if I did not happen to balance the ship in a current which would permit me to avoid ending my course as an approach to the coast would make necessary.

The sky in our zenith was clouded over above 1,900 meters. I was trying to maintain the balloon at an altitude of 1,800, the best for direction. That made for our progress toward the south, southeast, and would eventually lead to the Atlantic near Charleston, if, of course, we did not meet a current which would force us into the interior.

My balance at 1,800 meters became more and more difficult because of a new storm which appeared in the northwest.

As usual in this kind of weather, the air was disturbed by ascending and descending currents. After numerous trials, we unwillingly ascended rapidly to an altitude of over 2,000 meters, in the clouds, where I could not and must not remain.

Each time I was obliged to stop our ascent by valving, in order to avoid being forced up to 4,000 meters, our highest altitude attained Sunday afternoon.

At a quarter past 12 on Monday began the events which were prematurely to arrest the *Belgica* in South Carolina. I was rapidly being drawn to a high altitude. The storm from the northwest had come closer. It was when, at 2,500 meters in the clouds, flashes of lightning became frequent that I stopped our rapid ascension.

Since balance was impossible between 1,600 and 1,800 meters, I decided to near the ground to navigate for the length of time it would take for the storm center which had appeared on our right to overtake and out-distance us. A quarter of an hour later, we were proceeding by means

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of our guide rope, very slowly, and with a wind from the east or northeast. From time to time the country was dotted with small woods, but it was easy enough to navigate with the guide rope.

Unfortunately (again) man proposes, but God disposes! The balloon stopped just as I was going to tell my companion, who had stood his aerial baptism in ballooning very well and already for quite a long time (nearly 31 hours), of my intention to keep at a low altitude until daylight and to attempt afterward my program at a higher altitude.

The guide rope was caught in the trees of a forest we had just passed. We drew it up into the basket and the *Belgica* freed itself, but the ship had grown heavy, and a drop of ballast kept it only just above the trees. I could not repeat this maneuver, for I would be forced again to an altitude and it was absolutely essential that the approaching storm out-distance us.

We advanced a short distance and were again arrested by our guide rope. A change of current coming from the south entangled us still more. This time it was a complete halt. The minutes rolled on, and if we prolonged our stop more than 15 minutes there was the danger that it would be considered as our point of landing.

From a nearby road the headlights of numerous automobiles were directed at the point above which we were stopped. In my poor English I requested the occupants (for whose color I could not account at the time!) to be good enough to disengage my guide rope from the trees. After a good deal of shouting, some negroes entered the forest and made a great effort to free me. It was not easy, for the ground was incredibly uneven. After some time, about 20 of these men managed to disengage my

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guide rope, and dragged us to a point above an open field.

Here occurred the stupid incident which definitely spelled the finish of the *Belgica* in the race of 1927. The negroes were doubtless worthy men but they were too exuberant. They did not wish to let me go. A little fatigued by my efforts to make myself understood, and forced by my conscience to regard this stop as being somewhat irregular, I argued for release with difficulty. In the course of these events my basket touched the ground.

The race was over!

Our basket still contained enough ballast to have made it possible to hold out until noon, and probably even until the next sunset—8 bags, of 15 kilos each, 3 bottles of oxygen, weighing almost 40 kilograms and all our fairly heavy equipment, part of which could have been sacrificed.

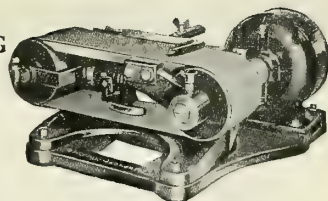
My thoughts went back to the energetic end of the race of 1920 when, leaving a part of the country not far distant from where I now found myself (Birmingham, Alabama), I landed southeast of Montreal (North Hero, Lake Champlain).

I finally succeeded in getting all the negroes, who formed nine-tenths of the group surrounding my basket, to go back to the road, so that only five people remained near me in order that there should be no mishap.

At 1 o'clock in the morning, Monday, the 12th of September, the *Belgica* spread on a gust of wind over a field covered with tall grass. My companion and I decided to pass the night near our balloon and to begin the packing of it ourselves.

Even though we had just finished in a premature and painful fashion, after a damp night in these more or less tropical lands harassed by insects, I was consoled to some extent by the exceedingly warm reception accorded to us in the nearby town of Florence.

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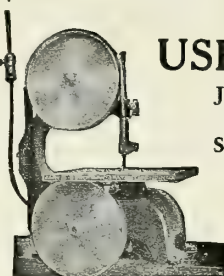
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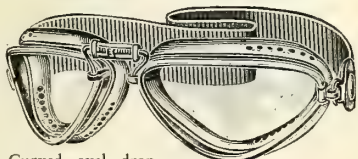
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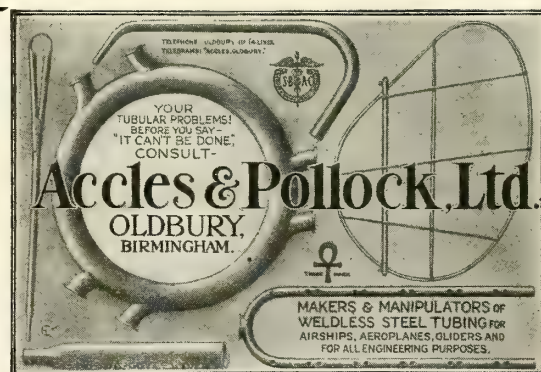
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WANTED: Two experienced pilots that desire all year round work. Must have good record and preferably transport license. State in first letter full particulars including salary expected and date available. ROYAL AIRWAYS, INC., 885 Flatbush Avenue, Brooklyn, N. Y.

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What an examination of Col. Lindbergh's engine showed

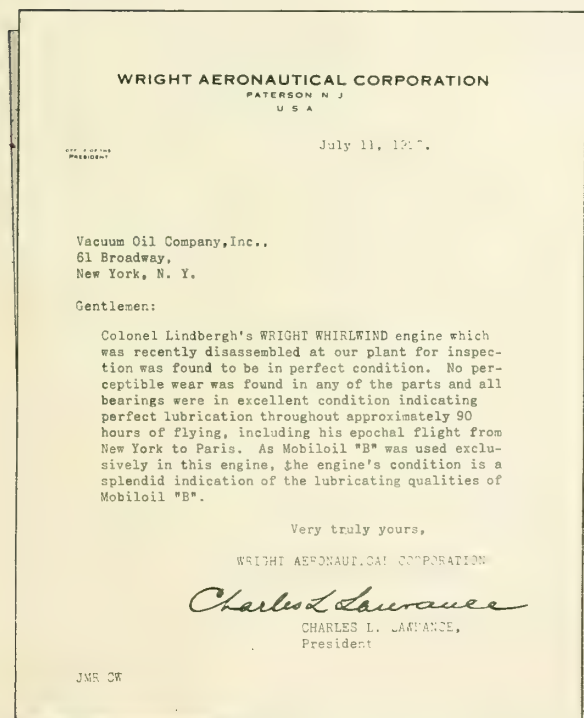
Before starting on his nation-wide tour, Col. Lindbergh's New York-to-Paris engine was dismantled, inspected and re-assembled at the Wright plant. So perfect had been the lubrication and the entire functioning of this wonderful engine that it was not necessary to make any replacement or even grind the valves.

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In addition Col. Lindbergh told us personally that he used only 3 gallons of Mobiloil "B" when he flew from San Diego to New York.

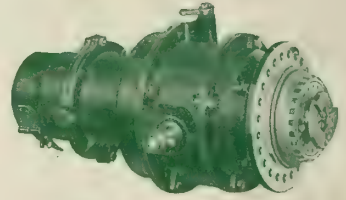


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AERO DIGEST



GOOD NEWS FOR RESERVE FLIERS
Assistant Secretary of War Trubee Davison

WEATHER CONDITIONS ENCOUNTERED ON MY FLIGHT
Clarence D. Chamberlin

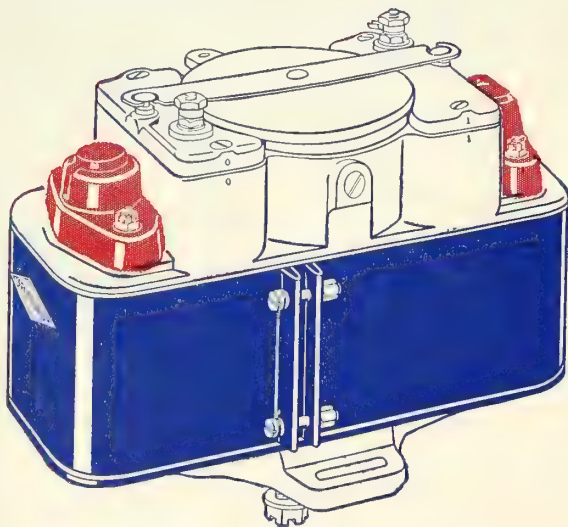
What Transatlantic Flights Augur For The Future
General William Mitchell

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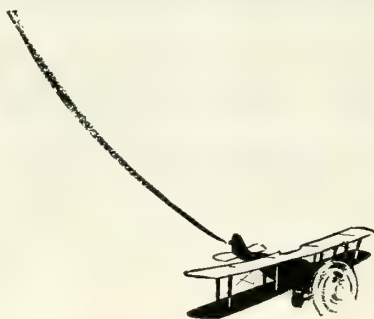
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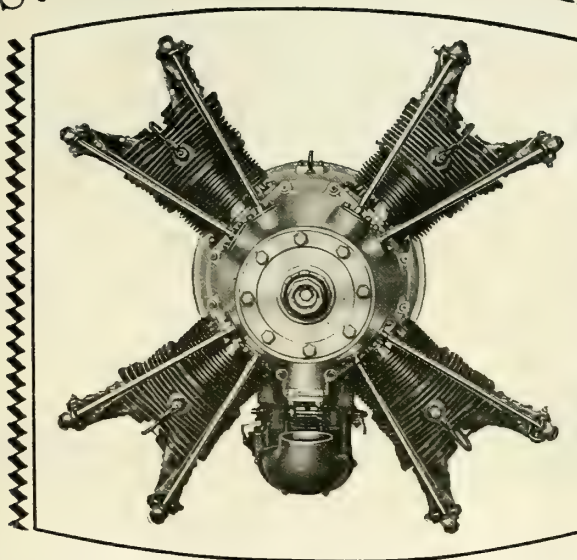
Deliveries are now being made on a quantity order of Curtiss O-11 "Falcons," built for exclusive use by the National Guard. The "Falcon" is the machine which is being supplied in large quantities as the standard two-seater observation and attack plane of the U. S. Army Air Corps.

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★This test was made on October 16th-17th at Curtiss Field. Heavy rain in the open cockpit exhausted the pilot and made it necessary to land with but 85 of the original 107 gallons used. The plane averaged 4.9 gal. per hour or 16 miles to a gallon. The Waco carried a useful load of 1001 lbs. The flight was under observation of Capt. W. Hays and Lieut. J. Beveridge of the Army Air Service. An attempt to beat the world's endurance record will be made with this motor.

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The plane which places least dependence on the human element approaches closest to absolute safety. That is the principle on which the Ford Tri-motored Transport is designed and built. It reduces dependence on human performance to the minimum.

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Dearborn, Michigan

AERO DIGEST

Vol. 11 No. 5

THE MAGAZINE OF THE AIR

NOVEMBER, 1927

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The "Spirit of St. Louis" in flight over DuPont field, Wilmington, Del.

Acme Photo.

*Colonel Charles A. Lindbergh ends his 22,350-mile tour
of the 48 United States in his "Spirit of St. Louis"*

GOOD NEWS FOR RESERVE FLIERS

THE Air Corps Reserve is of tremendous importance to the National Defense, and it is the desire and intention of the government to do everything possible to develop it and bring it to the highest stage of efficiency and usefulness.

World War experience clearly demonstrated the necessity and practicability of this Citizens' Reserve and the National Defense Act, passed in 1920, is based on a recognition of this general principle.

The Reserve pilots have amply demonstrated their desire to do their part in times of peace. I know full well that they have had many disappointments. They want to fly, and they have only been able to do so to a limited extent. I wish it were possible to declare their worries to be over, and that all will be clear sailing in the future, but that cannot yet be done. I can state, however, that the light is shining on the horizon; that things are looking brighter; and that developments during the past few months have been such as to justify the hope and even the belief that the Reserve situation is decidedly improved, although their troubles are not yet over.

At the present time Reserve flying is in the transition period. War-time equipment is being discarded, and the five-year Army Air Corps expansion program is in its first year.

The situation naturally divides itself into three general categories: first, planes; second, funds to put them in the air; third, the opportunity of Reserve officers to do active service with the Regular Army.

Ever since the war the planes used by the Reserve have been of the JN type. These ships were of war-time construction, and it was necessary to rebuild them several times in order to make them safe and serviceable. They have performed a heroic service to aviation, but their day is done. They are of obsolete design, and of wooden construction. The War Department felt that it was no longer justified in continuing their use. Consequently, on the first of last September all "Jennies" were washed out.

Their elimination creates a temporary shortage of planes, but this is being filled with Regular Army primary training planes, which are of modern design and steel construction. These planes have proved to be far superior to the JN for Reserve use in practically every respect. It will take some time to provide the number required under the five-year program, but in 1928 ninety-two will be in active service, leaving the Reserve only seven planes short of the number called for under the five-year program.

In the meanwhile there will be a serious shortage, due to the circumstances which I have outlined above, but a shortage which will be followed by a big advance.

It is thought highly desirable to develop a plane for the Reserve of a still more advanced type than the training plane. To this end a competition has just been held. It will be some time, of course, before the results of the competition can be realized on a scale sufficiently large, it being necessary to conduct experimental and service tests first,

By F. Trubee Davison

Assistant Secretary of War for Aeronautics



but it is the War Department's plan to eventually replace the training plane, insofar as Reserve flying is concerned, with

this still more advanced equipment. You will see, therefore, that we are taking immediate steps forward by substituting an up-to-date plane for the JN, and are paving the way for the next succeeding one by a brand new design.

The number of flying hours allotted to the Reserve has been steadily decreasing. Last winter the Appropriation Committees of Congress, however, upon the recommendation of the Director of the Budget, recognized the seriousness of this decrease, and incorporated a deficiency appropriation to take care of it. Unfortunately, the bill was lost in the filibuster at the end of the session, but it is safe to say that had it not been for that, the additional funds would have become available.

I have no doubt, therefore, that the same appreciation of and interest in this situation will be evidenced this year; and that such provision will be made for Reserve flying as will be consistent with the equipment available.

The five-year program calls for 550 Reserve officers on active duty for one year in the Regular Army at the completion of the program. At the last session of Congress funds were appropriated to call 110 of this quota for this year. The plan is to add 110 such officers each year until the total of 550 under training every year is reached.

This is a very important part of the five-year program, and has vital significance in building up the Reserve Corps. These officers will have the best possible training with the tactical units and on service equipment. It is obviously far more effective than ordinary inactive flying coupled with two weeks training. Men who are with the tactical units of the Regular Army for a full year really will be going through the mill and when they come out the other side will have had an experience of great value.

At the same time this provides a most desirable method of giving thousands of hours of flying time to a comparatively large number of Reserve officers, and should be taken into consideration when estimating the number of flying hours available to the Reserve as a whole.

Furthermore, forty Reserve officers will be sent to Army Air Corps training schools for twelve-month "refresher courses." Last year twenty officers were given similar courses, which covered only six months.

Such, briefly, is the situation facing our Reserve fliers. It holds real promise: a guarantee of first rate equipment, as against war-time equipment; the hope of additional opportunity to fly; and the inauguration of a plan which will enable a substantial number of Reserve officers to have a full year's active training with the Regular Army.

With this prospect in sight, Reserve officers can take new heart, and I am confident, with this in view, they will keep up their interest, loyalty, and enthusiasm during some of the lean months that face us in the immediate future, but which will gradually be substituted by better times.

WITH a twenty-one gun salute and sufficient advance publicity to lure most of the important military dignitaries from their swivel chairs in Washington, D. C., the people of Dayton on a rainy Wednesday morning last month reawakened in the Army a belief in Santa Claus.

With pomp and military precision one of those functions to which all America seems to be addicted, a formal dedication was held at new Wright Field to commemorate the

turning over by the people of Dayton of 5,000 acres of their best aviation soil to the Army.

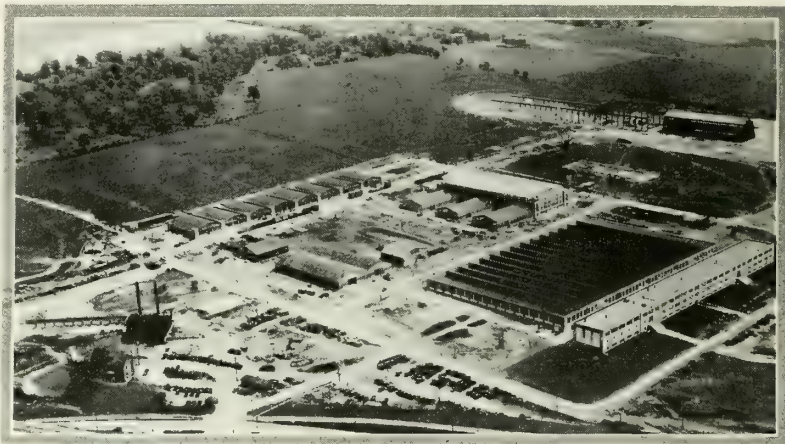
Whether or not the gift came as a complete surprise we cannot know, but the fact is everyone concerned acted enormously pleased and surprised as if the ceremonies themselves were the first inkling of what the people of Dayton had done and politely ignored the fact that the Army had been building on the ground for more than a year and a half. Such is the nature of a formal dedication.

The year and a half, however, that the Army had been on the ground before it was publicly informed that the land was a gift to the Army Air Service, had not been wasted, with the result that when the air folk assembled from all parts of this aviation agitated land there was something

SANTA CLAUS COMES TO THE AIR CORPS

The Formal Opening of Wright Field

By Francis D. Walton



Official photograph, Army Air Corps.

Wright Field, Dayton, Ohio, the gift of the city of Dayton to the Army Air Corps.

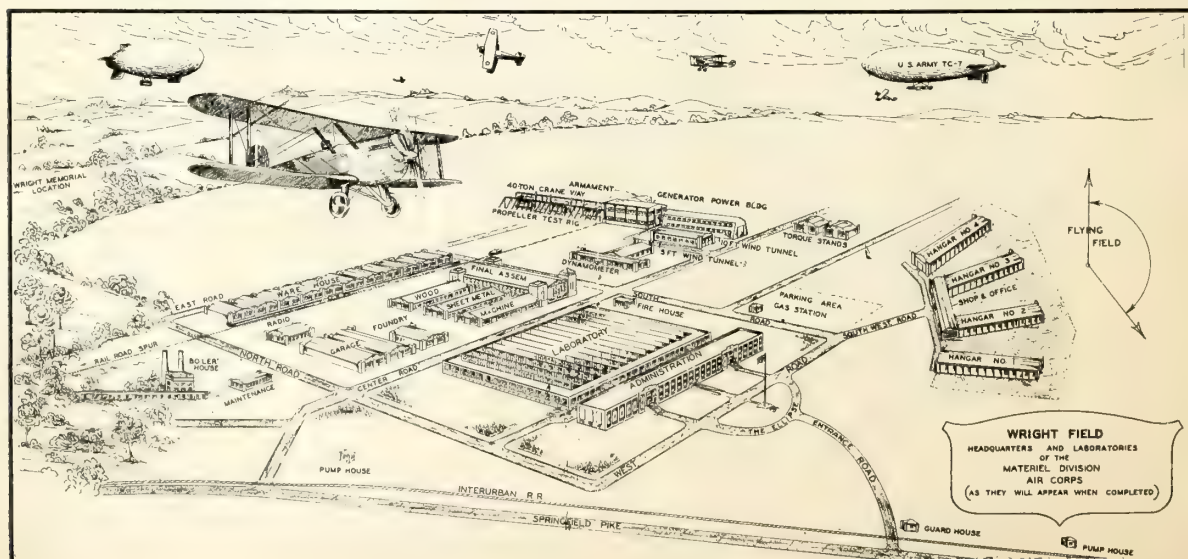
tangible to show them through and around.

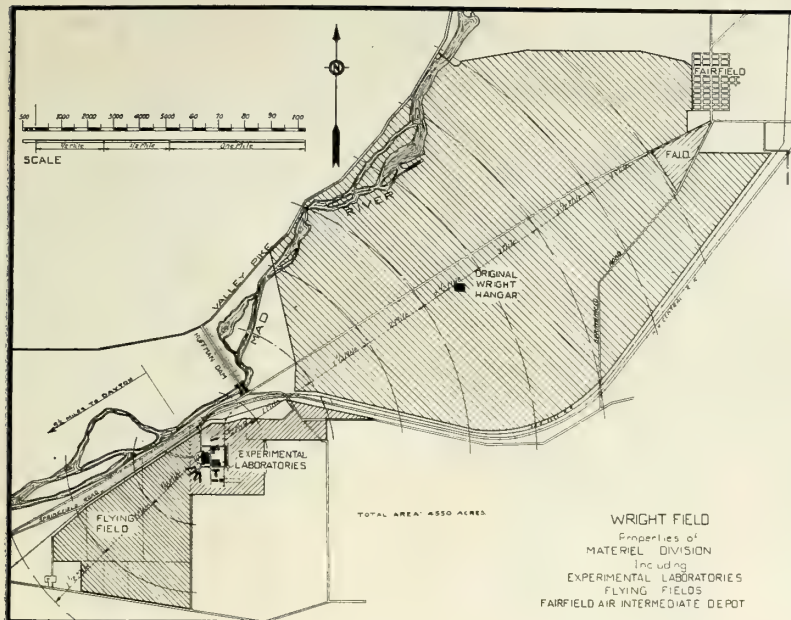
The new group of modern buildings which the Army has erected on its gift will comprise the headquarters of the Materiel Division of the U. S. Army Air Corps. Nothing has been spared in making this the "best and finest," and though it was noticeable, particularly in the local press, that there was a tendency to ignore the fact that the new station, both as to size and equipment, is without an equal anywhere in the world, the fact is nevertheless true.

The laboratory building is the largest of the building units which has been completed. It is a one-story structure with a floor space of 143,564 square feet. For the purpose of the ceremonies there was arranged in this building an exhibit of every phase of the industry which the Wright Brothers launched twenty-four years ago.

In addition to the laboratory there is an administration building, a foundry, a wood shop, a sheet metal shop, a machine shop, an assembling building, a radio building, an instrument building and two large wind tunnels.

The Army air officials from Washington marched through the building in formal inspection of the works, and there was to be noticed a slight feeling of pride, which no doubt was pardonable, and an air of frank confession which





seemed to say, "We did it with our little Five Year Program!"

In the wake of the official party there came many of the outstanding figures of civil and military aviation in the country. In fact it was a regular gathering of the air clan, which as to numbers was only outdone by the Spokane gathering.

Schlee and Brock, but recently home from their almost round the world flight, were there, as were Lieutenants Maitland and Hegenberger, along with many others who have become national figures by virtue of the sudden awakening of public interest in things aeronautical. And far in the wake of the official party there moved the man who was the start of it all. Slightly bewildered, it seemed to us, and his clear blue eyes filled with no small amount of amazement, came Orville Wright. He was accompanied by a youthful second lieutenant who was attempting by use of 1927 Brooks Field phrases to explain to the founder what it was all about. These two figures alone epitomized in a different way the same story of the tremendous onward rush of aviation which was depicted throughout the entire station.

As yet no hangars have been erected at the new field, and the guests also learned that the largest flying field is still not a field. The air program which closed the day's ceremonies were held at the intermediate depot at Fairfield. Many more months of work must be done before the new field can be opened to fliers.

The feature of the air meet was the delayed running of the John L. Mitchell Trophy Race, a closed event for pilots of the First Pursuit Group. The failure of the First Pursuit Group to attend the recent activities at Spokane was the reason that this race was not included on the 1927 National Air program. Just who won this race still appears to be in doubt. Darkness had

come and every spectator long since had left the field, when that veteran second splitter, Odie Porter, put away his Ingersoll for the day and announced to the two conscientious scribes who were still waiting for the official results that with good luck he would be able to announce the winner in another day or two.

It is axiomatic that no air race pretending to any official standing can be run these days without Odie as master of ceremonies in the timer's stand. Unfortunately his aides whose business it is to stand by and catch the pieces as Odie dissects minutes and seconds to three decimal places must be recruited at the scene of each new race. It is our personal observation that these willing novices are not always quite bright, which reflects unjustly on the work of Mr. Porter. At Dayton this seems to have been the case, and while they worked willingly the sum total of their endeavors appears to have been to shuffle the time cards into hopeless

confusion where it was possible to report little more than the fact that the race appears to have been won by some pilot of the First Pursuit Group.

Speeches, as everyone knows are an indispensable feature of dedication ceremonies. There were speeches at Dayton. Said Secretary of War Davis:

"It is about time America got over the feeling of inferiority complex as far as aviation is concerned."

And more of the same. But the brief remarks of Major General Mason M. Patrick are more appropriate for quotation in this report, particularly as they referred to the gift on the part of the people of Dayton, "which returns the aviation capital of the United States to Dayton." This appears particularly pertinent in that it throws a little light in the general direction at least of the reasons behind the unusual gift.

The people of Dayton saw that aviation activities were moving away from the birthplace of flying. The Army's presence on McCook Field. (Continued on page 619)



P. & A. Photo.

Orville Wright, Sec'y of War Dwight F. Davis, Judge Landis, the czar of baseball, Ass't Sec'y of War F. Trubee Davison and Major General Mason M. Patrick, Chief of the Army Corps, at the Wright Field dedication ceremonies.

AIR—HOT AND OTHERWISE

SOMETIMES little Willie Wings has been an aeronautically instead of an aeronautic boy. Flights now and then have been erratic—flights of fancy, finance and foolish effort at impossible achievement instead of technically and otherwise reasonable.

Occasionally, the play has been too hard or reckless and has resulted in smashed fingers, bleeding noses, profusely frescoed eyes or even worse. But in the main the sober-minded but aspiring have retained control. Thus the experimental progressed into what may be called laboratory success, laboratory success became exhibition success, exhibition success became military and naval utility and from military and naval utility is beginning to emerge an art as commercially sound as the arts of railroading, steamshiping and motoring—and infinitely more amazing than the most fascinating of these, much more romantic, and, in the last analysis, possessing greater potentialities for human civilization.

Don't laugh, but a real proof of this of which I recently have heard was the little journey of Will Rogers, who on a Tuesday morning, when he was in Hollywood, California, remembered that he "had an engagement with a couple of fellers in New York for Wednesday night."

As soon as was convenient he took off in a chartered plane from Santa Monica, on the Pacific coast, for the metropolis, on the Atlantic coast—five days away by fastest train.

A one-stop flight landed him in New York City comfortably if almost magically in good time to keep his engagement with the "couple of fellers," and then he remembered that he had, also, a Friday engagement with another pair of chaps in Hollywood.

Again he sprang into the air, going west, and kept that engagement too, arriving a whole night ahead of time.

Study this out. He left Los Angeles Tuesday morning, kept his Wednesday night appointment in New York and was back in Los Angeles "before the curtain rose" on Friday evening.

Dates? Sure: He departed from the California airport Tuesday, October 18, about 10 a. m., "after a good breakfast and no hurry," as Will states it. He flew comfortably to New York, without any overstrain or even any hustle for anybody but the engine, and kept his appointment where the white lights shine. That was all attended to and over Wednesday night. Then, comfortably filled with such food as a cowboy-humorist adores, Rogers left New York in his non-bucking, fully gentled plane and reached Los Angeles in time to see a show on Friday evening. Put that in your pipe and smoke it—anywhere you like away from gasoline. Los Angeles till after breakfast on the 19th, New York, business, a show and a night's sleep and then to the highway again—the really high way—and a good seat in a theatre in Los Angeles for the evening of the 21st.

That's just a sign of these astounding times, the most astounding detail of which, brethren of the Aerial Brotherhood, is aviation.

DECEMBER, 1928, will be the twenty-fifth anniversary month of the Wright Brothers memorable flight at Kitty Hawk. That started it. But it really had a meaning bigger than the fact that William Rogers, ex-Mayor of Hollywood, can now breakfast in the Sandwich Islands on

The High Way Honor the Wrights! Three Aids to Air Progress By Frank A. Tichenor

the food their name so fully indicates and lunch in the Bermudas on that pungent fruit named after them, thus gaining strength for one more flight, that same fine evening, to Hesse-Darmstadt or what have you.

That flight at Kitty Hawk, which has been several times described in AERO DIGEST, each time with new details gathered while there still may be a possibility of gaining further knowledge of the great event, was handled at the time with such modesty that the world scarcely heard of it.

It created a new art, a new industry, a new utility, a new profession, a new sport, a new means of national defense. Name the other single events in the history of the United States which have been of equal importance to the world and to this country. I will grant the first voyage by the steamboat invented by Robert Fulton; the first message by "magnetic telegraph," sent by Samuel F. B. Morse; the first glow of the electric light, invented by the great Edison, and the first whisper of the telephone, invented by Edison or Bell—or both. No more. Eli Whitney's cotton gin was notable, epochal, but less important than these others.

The quarter-centennial of this great, all-American invention, the heavier-than-air airship, is impending, but not a word has come from Congress, from any State, Legislature or Governor, even from the industry, itself, suggesting fitting observance, an adequate party on the twenty-fifth birthday of what we now know to be the most important invention in the history of civilization!

AERO DIGEST here and now makes the very first suggestion to this end. Plans should be made and preparations started instantly. The program should be the most distinguished that the world ever has known in connection with a similar occasion.

The recent celebration of the steam railway centennial was interesting, but somewhat incoherent. The first locomotive was an English achievement. In America all we have a right to claim as ours was the series of anniversaries dealing with the first application of the locomotive to our own transport. We are utilizing Watt's English steam-engine and Stephenson's English locomotive.

With the heavier-than-air flying machine the situation is quite different. The internal combustion engine made flight possible. Without it the Wrights scarcely could even have thought out their plane. Internal combustion engines are an American invention. Then came the plane, itself—as American as the Rocky Mountains or the Rough Riders. Heavier-than-air flight is OURS and ours alone.

The Wrights! Great men. Modest men. Epochal. Intellectually and psychologically massive. Good business men as well as geniuses. Patriots for the United States till they were so insulted by the nation of their birth that they felt impelled to and were justified in presenting the model of their first machine, no, the machine, itself, to a museum in England, a country which had shown them greater, cleaner, more consistent honor than their own had shown them.

This nation has not even marked the place of the first successful flight in any manner indicative of real appreciation of its actual importance.

It is time, now—it is THE time, now—for the whole air industry, profession, trade (Continued on page 606)

THE WEATHER CONDITIONS ON MY

FLIGHT TO GERMANY

By Clarence D. Chamberlin

Statements regarding the weather conditions encountered by the Columbia on its flight to Germany, contained in the article, "An Analysis of Weather Conditions on Recent Transatlantic Flights," by Lieuts. Logan C. Ramsey and Earle H. Kincaid of the U. S. Navy, published in the October issue of AERO DIGEST, are contradicted by Clarence Chamberlin and the real facts are here stated.

NO better argument for the necessity of such a conference as that recently suggested by Dr. James H. Kimball, of the United States Weather Bureau in New York City, at which those of us who have flown the Atlantic or the Pacific could get

together with the meteorologists who forecast weather conditions for us, is to be found than in the October issue of AERO DIGEST. I refer to an article under the names of Lieuts. Logan C. Ramsey and Earle H. Kincaid, of the United States Navy, entitled "Analysis of Weather Conditions on Recent Transatlantic Flights."

Presumably this article is an expert treatise on meteorological conditions, encountered between here and Europe, and emanates from the Hydrographic office of the Navy Department. As such it is quite likely to be taken as a guide-book by those contemplating future transatlantic flights. Actually, it is erroneous and misleading in so many details concerning the flight of the Bellanca that I suspect it is "all wet" regarding the other flights as well. In my opinion, the fact that this analysis appears to be cloaked with authority while in reality it is full of discrepancies and inaccuracies, makes it a menace rather than an aid to aerial navigation of the Atlantic. A similarly misleading article on the same subject recently was published in the *New York Times*, being largely a reprint from the *U. S. Naval Institute Proceedings*.

Suppose we begin with the weather map published by Ramsey and Kincaid to illustrate the "ideal weather conditions which prevailed during Chamberlin's flight" and reproduced herewith for purposes of comparison. It indicates that the Bellanca encountered squalls in passing over Newfoundland, when, as a matter of fact, visibility at this time was unlimited and not a cloud was sighted for 500 or 600 miles. This chart shows a low pressure area on the southern tip of Greenland which in reality was much farther south as predicted by Dr. Kimball and resulted in the abandonment of our intended Great Circle course from Cape Race to the coast of Ireland for a more southerly route.

Besides the dotted line indi-

cating a 40 degree temperature area careful readers will discern that the "experts" had us flying through sleet. This is one thing we encountered nowhere on the flight to Germany. To quote from Ramsey and Kincaid:

"Chamberlin encountered

a little bad weather with some sleet but compared with Lindbergh's dose it was very mild, due to the fact that while Lindbergh flew as high as 10,000 feet, Chamberlin kept close to the surface."

Actually the Bellanca encountered her first thick weather some 600 miles off the coast of Newfoundland and climbed steadily to keep above it during the night, reaching an altitude of 15,000 feet. At daylight cloud masses 2,000 to 3,000 feet higher loomed ahead and because the heavily loaded ship already was at her ceiling we were forced to fly through. It was at this period that ice began to form on the leading edge of the wings and on the windshield (owing to a temperature of 30 to 31 degrees in the fog) and we came down through the cloud blanket to warmer levels, finding a ceiling varying from 500 to 1,000 feet with scattered rain squalls underneath.

Because of this storm and not—as indicated in the Ramsey-Kincaid analysis—because the Bellanca was blown 450 miles south of her course by winds which even the Ramsey-Kincaid chart shows would give a northern drift, we turned to the south as Dr. Kimball had advised to skirt the bad weather. Thus we picked

up the North Atlantic ship lane route to Europe. We had seen the lights of two boats bound to or from Halifax during the early part of the night before thick weather was encountered, as well as scores of icebergs, and thereafter we picked up five more vessels, the *Mauretania* being the third ship sighted in this series. In fact, instead of

picking up our course from the liner, as Lieuts. Ramsey and Kincaid seem to imagine, we were so well on our course at this time that the *Mauretania*, coming over the horizon under the Bellanca's nose, very nearly was passed without notice. Naturally we played around the first big ship we had seen because we knew she would (Cont. on p. 616)



Clarence Chamberlin

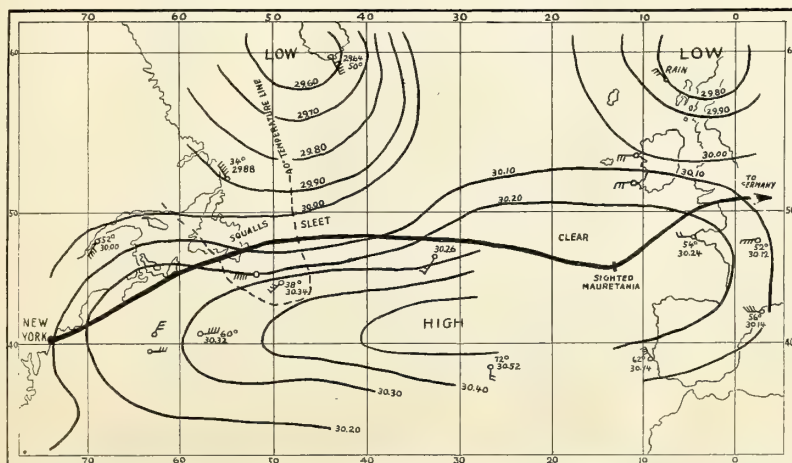


Chart showing weather conditions which prevailed during Chamberlin's flight as set forth in the Ramsey and Kincaid article.

ARE WE AIR WORTHY?

THERE is no danger in air navigation which cannot be eliminated by adequate precaution;

By Donald Duke

present-day anomaly, since the danger of fire in the air is no greater than fire in a boat, train, or automobile, and

and man, woman or child has no more to fear when taking passage in the well-equipped air transports of to-day than in vehicles common to the other established systems. All are alike, insofar as skilled personnel, properly maintained operating equipment, and safety precautions are concerned. The train, the boat, and the motor coach have supporting elements no more substantial than the aircraft. It is only that the age has not yet become accustomed to the air, as a supporting medium, that more people do not utilize its advantages. We do not have to look back many years to see our own parents afraid of ocean liners and rubber-tired contraptions, without which present-day social, civic, and industrial standards would be impossible. It is, therefore, only natural that air as a medium for transportation should be put to practical and profitable use at this time, since it is just as essential to the continued progress of mankind as each successive method of transportation has been in the past.

For centuries, primitive man transported commodities on his back, until reason and experience placed this burden in turn on the beast, boat, stagecoach and railway. To-day finds the United States leading the world in railway mileage, with a standard of service likewise unequaled, yet the man in New York, whose presence is required on the West Coast or in a southern state, is already growing impatient at the loss of time required to transact his business and return. One of our large automotive corporations is already putting to practical use a luxuriously appointed ten-passenger plane for transportation of its officials, between general offices and factory one hundred and thirty-five miles distant. Business emergencies, necessitating hasty conferences of scattered executives, are thus satisfactorily met, and action expedited in a manner impossible with surface transportation facilities. Using a multi-motored plane of proven airworthiness, flown by a pilot of proven ability, between well-equipped airports, with known intermediate landing fields and beacon lights at intervals along the route, these officials not only travel safely and comfortably at a great saving of time, but with impunity invite their guests to accompany them, regardless of the fact that twenty-five per cent of their flights terminate after dark. Several industrial companies are now using planes for the transportation of their salesmen, material and merchandise, while the number of privately-owned planes used for commuting from the country home or for sport flying is increasing each year, and only the present lack of adequate, close-in airport facilities makes this practice less appealing to the business man, since the cost of planes suitable for this purpose is about the same as the car he now uses.

FLYING SAFE

Contrary to public opinion, and in spite of Newton's laws of motion, flying, when conducted with the same care and regard for safety precautions as are applied to railways and ocean navigation, is equally safe and equally deserving of public confidence. Engineering standards are more exacting in aircraft construction than in any other public vehicle. The factor of safety is far greater than needed for the maximum load to be carried. The much-heralded flaming plane—a rare event even during the war when gasoline tanks were the target for incendiary bullets—is a

suitable method of escape.

After ten years of travel by air, rail, automobile, and on the hoof, I am convinced that getting about below makes one think faster and jump quicker than in the great open spaces aloft where railway crossings, street intersections and stop-go signals become memories of earthly vesture. If given my choice of vehicles for a trip to the West Coast, or any distant city with a good airport, I would unhesitatingly choose the plane for both myself and family. It would get us there more quickly without the monotony of railway travel and the discomforts of water travel.

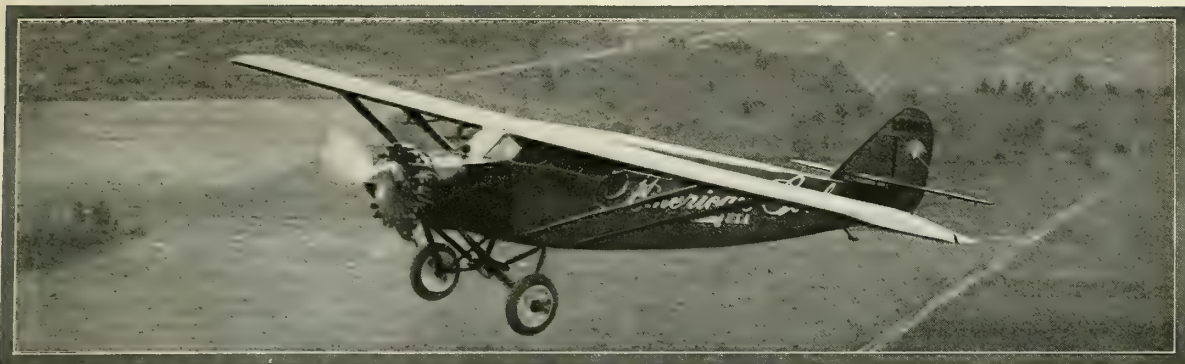
The common misconception exists, that because one cannot gaze upon the troubled waters from Niagara's brink, or walk on the edge of a precipice without dizziness, one would not be a good airman, which is not at all the case but, on the contrary, proves that individual to be normal in this respect. Walking on the edge of a high railway bridge produces dizziness that does not occur on the same bridge in a passenger coach. It is all a matter of perspective, which in the airliner is made more glorious by the enlarged horizon. I have taken up children, as well as men and women in advanced years, and have yet to see a healthy normal person, who, having flown under favorable conditions in an airworthy plane, did not express a desire to repeat the performance.

Flying is the most wholesome recreation I know of, inducing an exhilarating relaxation, and at the same time providing the opportunity for retrospection and introspection that one seldom feels midst terrestrial surroundings.

PILOTS

While monotonous to an extent for the pilot, particularly at night, there are many aviators in the military, air mail, or commercial service who, in the ten or more years of flying, have spent a large portion of their time in the air and still find it too fascinating to give up. Contrary to another misconception, these pilots, like wine and a certain type of automobile engine, improve with the passing years. The seasoned airman is better equal to the added responsibilities of aviation's progress than is the younger flier with less time in the air. The average person of either sex can learn to fly if given sufficient instruction, but only a small percentage become expert. The annual report of Major General Mason M. Patrick, Chief of Air Corps, U. S. A., has the following pertinent remarks in this connection: "It becomes more and more apparent that some men can learn to fly and others cannot, just as some have musical or mathematical ability and others do not. The attempt to teach one who lacks it is a waste of time, money and effort." While fifty-six per cent of the applicants for flying training at military schools pass the required physical standards, less than thirty per cent of those accepted receive the coveted rating. It is in these schools that a majority of the pilots now flying commercial aircraft have received their training. The employment of pilots for aircraft operation, therefore, is one case that admits of no compromise—skill and experience being indispensable prerequisites to safe and conservative flying.

(Continued on page 622)



P. & A. Photo.

THE AMERICAN GIRL

Ruth Elder's Transatlantic Flight

TO the Air Clan I take it that a flight is a flight, whoever makes it, Eskimo

or Uruguayan, man or woman. Therefore that Miss Ruth Elder tried gallantly to be the first woman to fly overseas has slight if any professional significance. It was the effort to make the mighty hop in a two-passenger plane, George W. Haldeman acting as pilot, being the second person in the public interest and the first in aeronautical importance, that really was important. It was a gallant effort.

Looked at from another point of view the flight really had a very great meaning, for the distance covered by Miss Elder and the able Haldeman in their attempt at transatlantic flight constituted the longest over-water flight yet made by man—to say nothing about woman.

As the Navy Department announcement covers this, I will quote it in full. It says:

"The distance from Roosevelt Field to latitude 43:54 north, longitude 21:39 west (where was the steamship *Barendrecht* when it picked the daring couple off their plane, after it had landed because of a defect in piping) is 2,278 nautical miles, or 2,623 statute miles. The distance from the Presidio, San Francisco, to Honolulu Reef Light being 2,057.5 nautical miles. The distance covered by *The American Girl* is 199.5 nautical miles or 229.7 statute miles longer than the distance from San Francisco to the Hawaiian Islands."

The start on the transatlantic flight effort was made from Roosevelt Field, almost exactly at sunset, October 11, after considerable waiting for good weather. *The American Girl*, their Stinson monoplane, took a course along which it was believed would be many vessels, but the hope of Haldeman that he would pick up an ocean steamer every hour after he started was not realized.

The course they had mapped out included 3,600 miles over water, something like 400 miles more than the Lindbergh route to Paris. The better weather indicated along the longer route was believed to be more than compensation for the added distance.

The Elder-Haldeman flight, probably rather more widely sensationalized than it might have been if no woman had been involved, of course attracted the most intense and sympathetic general interest, as well as the thoughtful attention of everybody concerned with the development of long-distance flying.

The next day after the take-off came word from a vessel which had sighted the plane 400 miles to the eastward of New York.

The next news that came from *The American Girl* was

on October 13, when it was reported that when the plane was 800 miles almost due west from Paris, and, therefore, in a sense nearing its journey's end, it was forced down about 350 miles northeast of the Azores, the trouble being caused by the breaking of an oil feed pipe.

Fortunately this accident occurred within sight of the Dutch tank ship *Barendrecht*. A boat was lowered and the fliers were rescued before their land-plane sank. The plane was towed to the ship and was about to be hoisted aboard when it burst into flames, was destroyed and sank.

The fliers then reported that, encountering an ocean storm, they had been blown far off their course to the southward, but the bad weather passed with Cape Finisterre on the northern coast of Spain, only 500 miles away. But then the engine failed and they discovered this failure to be due to the fact that oil no longer flowed through the oil feed pipe. The plane did not fall, but landed on the water easily. It could not have been kept afloat. The

(Continued on page 612)



P. & A. Photo.

Ruth Elder and Captain George Haldeman.

SAFETY in AIR TRANSPORT OPERATIONS

“**H**OW safe is flying?” “How soon will we be able to fly across the continent?” How often every air enthusiast is asked these two questions! If I knew the answers I would be saved much lengthy explaining to non air-minded persons!

By Charles Townsend Ludington

Director of National Air Transport, Inc.;

President, Ludington Philadelphia Flying Service

(Paper read before Safety Meeting at the Philadelphia Engineers' Club)

The only answer I can give is one I do not dare give to the average questioner. Truly, flying is not safe! Neither is train travel, motoring, fox hunting, bank robbing or lying in bed. There is in our daily lives no such thing as being safe. What we are interested in is the number of miles we can fly, the number of miles we can ride, the number of fences we can jump, and the number of times we can seek rest in sleep before the law of averages gets us, in other words “how long can we get away with it?”

The conductor will assure an old lady that she is quite safe on the train; the motorist thinks nothing of starting on an all day trip; the fox hunter will indignantly deny that he is taking great risks. Likewise the average pilot will tell his passengers that they are entirely safe. The intelligent aircraft operator, and his insurance man, know that such statements are not entirely true and that they are interested only in knowing “how long they can get away with it.”

It is greatly to the credit of the operators, their pilots, their personnel, the designers of ships and engines, and the Department of Commerce that they are to-day getting away with it for longer and longer periods between accidents.

The man in the street has to-day been educated up to the point of believing that the air mail has become pretty safe, and he is right, and he is just about beginning to wonder how soon he can ride too, when his sleepy eyes rest on the scare headlines in his morning paper telling how some unfortunate pilot and his passengers met death when “the airplane suddenly nose dived into the ground!” He shrugs his shoulders, decides the train and his old bus will do a bit longer and awaits developments. He doesn't stop to think that the accident occurred because someone “ran out of knowledge,” and that aircraft operators to-day are acquiring greater stores of knowledge at a very rapid rate.

The safety problems of the operator of a fixed base concern are fairly simple. He must have a good field, good pilots, good mechanics, good shop equipment, and good ships and he must confine his operations to good weather. The records show that responsible concerns of this type do very well.

The problems of the conscientious air transport operator are very much more difficult. In addition to the requirements I have mentioned he must have good emergency fields, good navigational aids and instruments and his technical department must be constantly on its toes to take advantage of improvements in all branches of the art. His pilots must meet all weather conditions, for all the operator can do about good weather is pray for it and all he can do about bad weather is see that as far as possible his pilots will be forewarned. The operator, or his board of directors, must decide whether or not passenger carrying is justified over his route and if so his problems are still more difficult. Ice and fog are his enemies and the Department of Commerce his best friend. Only if he has carried out all the latter's requirements and a great many more of his own, has the air transport operator a

moral right to sleep at night.

I have assembled the figures of two representative American air transport operations. Those of

the rest would not appreciably alter the story:

The Western Air Express carries mail, passengers, and express between Los Angeles and Salt Lake City. It has terminal fields and shops at these places and one intermediate field. It flies over an airway, lit and maintained by the Department of Commerce. It crosses several high mountain ranges and long stretches of desert. It enjoys over most of its route a high percentage of good weather. Theoretically a daylight route it has often to indulge in night flying as its west bound plane cannot leave Salt Lake until the arrival of the transcontinental mail plane which is often delayed by impossible weather in the east. There are also occasional east bound delays due mostly to morning fogs at Los Angeles, but these have never been serious enough to cause the mail to miss its Salt Lake connection. The flying and shop equipment is excellent and the entire operating personnel is of the highest class.

In the period from January first to August first of this year a total mileage of 306,597 miles was flown in 3,165 hours and no forced landings due to either weather or mechanical troubles were experienced. Over 123,000 pounds of mail were handled without loss and 269 passengers were carried. Compared with a possible perfect performance the on time record of this company during this period shows its operations to be 99.86 per cent efficient. Since April 17th, 1926, when operations began, the Western Air Express has had some forced landings, but no accidents of any sort beyond three or four very minor claims under its workmen's compensation insurance.

National Air Transport, Inc., has a longer route, and more difficult and varied problems. Its ships fly between New York, Chicago and Dallas, Texas. They carry air mail and express. During the month of September passengers were successfully carried on the Texas route but this practice has been discontinued. Weather conditions for a good distance north of Dallas are fair. Nearing Chicago they become poor, and over the Allegheny mountains they are probably the worst in the United States. A day and a night service are run over this latter portion and during much of the time night flying is necessary at both ends of the Chicago-Dallas portion. From May 12th, 1926, to October 1st, 1927, 1,129,074 miles were scheduled to be flown. Of this total, 1,085,657 miles were actually flown in scheduled service. 43,417 miles of scheduled flying were defaulted due to weather or other causes giving an efficiency record of 96.1 per cent. To date over 1,200,000 have been flown. There have been 149 forced landings of which 114 have been caused by weather, 33 by mechanical failures and two by lack of gas. In only 46 cases was it necessary to entrain the mail. There have been no physical injuries to personnel. The total repair bill due to forced landings would not exceed \$9,000 though the equipment has an inventory value of nearly half a million.

During the month of September a total of 237 passengers were carried, 195 on the Chicago-Dallas route and 42 on the eastern route. The total passenger miles traveled was 85,861. This is too small a total to prove much as regards safety. Passenger carrying was discontinued because it was thought wise to make certain changes in the ships used for the

(Continued on page 622)

WHAT TRANSATLANTIC FLIGHTS AUGUR FOR THE FUTURE

WHENEVER a new undertaking is launched, there are always those who decry its possibilities, usefulness and value.

"Let things be as they were," they say, "where the relative order of things is well established and matters go on quietly and smoothly."

Had this system been followed, we would still be in a state of savagery, chasing each other around with stone axes and eating raw meat.

The same cry was heard when ships first rowed across the Mediterranean; when Columbus started out to sail the Atlantic Ocean; when Robert Fulton steamed up the Hudson River; when the railroad first puffed its way along a few miles of track; and when the first submarine was launched. In each of these projects, hundreds of lives have been lost in their development.

When we first obtained an appropriation for army aeronautics in this country, we heard the same protest. When I inaugurated the transcontinental flight from New York to San Francisco and return; the flight to Alaska in 1920; the sinking of the battleships in 1921; breaking and obtaining all the world's speed and endurance records for American aviation in 1922; the Round-the-World Flight and the second sinking of battleships in 1923, all of which undertakings were entirely and completely successful, we met with the same criticism and obstruction.

We were about to fly through South America and across the Antarctic Continent to Australia and South Africa, but these very agencies of retardation and conservatism stepped in to stop American aeronautical progress.

While the individual efforts of pilots, reduced to their own resources, in attempting to span an ocean, are small compared with those of governments or corporations, they deserve the greatest credit.

Some liken these flights to the attempt of a man to go over Niagara in a barrel; to a man attempting to walk across the Sahara Desert, with only the water he can carry on his back; or to a man trying to jump a six foot stone wall with a horse that can jump only four feet. Those who advance these ideas do not know the point of view of an airman. It is entirely different from that of a landsman or a seaman, and can be appreciated by neither in its entirety until one has had a taste of this latest accomplishment in the world.

An air passenger service all over the world could be established now with Zeppelin airships, which would be as safe or safer than sea travel or railway travel, and no more expensive. The reason that it has not been done is that the Germans were prevented from building these ships by the terms of the Treaty of Versailles, because the Allies knew they themselves could not build as good ships and therefore

By
General William Mitchell

*Formerly Commander Air Forces, A. E. F
and Director of Military Aviation, U. S. Army*



would be hopelessly behind the Germans.

Colonel Lindbergh's non-stop flight from New York to Paris, a distance of 3600 miles, was the consummation of splendidly balanced aeronautical mentality as exemplified in this man and the procuring of the best possible equipment that he could obtain in this country for the price within his reach. It was no foolish and idle stunt picked up on the spur of the moment. Behind it, in the pilot's head, was the thought that air power is the dominating thing in the world of transportation; that the commercial airplane, carrying passengers and goods, can span the seas in one-tenth the time required by a vessel on the water; that the airplane and airship can master any military seacraft such as battleships, cruisers or destroyers which may attempt to attack the United States; and that the individual pilot who has the knowledge and ability must show to the world that these things are possible with American ingenuity, now that the national aeronautical services in the United

States have been absorbed entirely by bureaucrats of the Army and Navy, and have long since ceased to progress.

Lindbergh's plane was crude compared to what the future air liners will be, in its structure, its navigating instruments and its power plant. It was not anywhere near the efficient and safe machine that can be devised and constructed at this time for transatlantic navigation.

To begin with, the plane had only one engine. If anything had happened to it, he would have had to land no matter where he was, and as there was no chain of steamers, floats or other means of rescuing him, he might have been lost.

His airplane had no radio. He could neither converse with passing ships nor with Europe or America. He could not check his position by finding his direction or keep his course by flying straight toward a radio beacon.

Lindbergh did have an excellent instrument for finding his direction, that is, the earth inductor compass. The ordinary magnetic compass is not suitable for aircraft because it depends for its action on the direction which a magnetized metal needle takes when freely suspended in the air. In the Northern Hemisphere, the north end of the needle dips toward the North Pole, and if the southern end is not weighted, it will assume an increasingly vertical position as the compass approaches the North Pole. This necessary weight throws it out of dynamic stability. If the vertical pin or standard in which the compass floats is disturbed from either its horizontal or vertical position, it throws the needle out of dynamic stability and it immediately begins to whirl. As long as the airplane flies on an even keel, the

(Continued on page 609)

AERO DIGEST

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REAL ORGANIZATION

SOMETHING real in the way of organization is badly needed in the American air interests. Aero clubs, pilots, associations, mechanics, protective leagues, or what not, and other new combinations are being instinctively created. An Aeronautical Chamber of Commerce has been in existence since the war. It was organized for a different purpose and apparently has served its members well.

A re-shuffling of the cards is needed to meet new conditions. There must be in the United States a single organization which shall include all and be of service to all, covering 100 per cent of the industry's needs. It should embrace every airport owner, every mail contractor and every accessory manufacturer. It should serve the whole industry, the whole population, the whole trade, not confining its efforts to any group of manufacturers, pilots or mechanics. Airports are being developed in practically every city of the nation. The owners of same should participate in the councils of the industry.

Unorganized the industry will grow; organized it will grow faster, much faster. Aviation should have an organization which will know what coöperative advertising means, which will know how to represent the industry in Washington, not only for the good of manufacturers or even for this nation, but for the good of aviation even though it be China, England, Russia or Patagonia. Aviation is aviation.

It should have proper coöperative representation in the capital of every country in the world. Such an organization would help sell to the people of the world the idea of air mail, air express, air passenger service. The right kind of an organization more especially would watch national and state legislation and by keeping the legislators informed of facts and needs would prevent the passage of improper laws and see to the creation of those that are needed.

ADMIRAL MAGRUDER'S SIN

WILL ROGERS gets it right when he voices the belief that Admiral Magruder's sin was in declaring that the Navy has been spending too much money. The Navy forthwith decides to shelve Magruder and use all the discipline of the powerful secretary to muzzle him.

It is astounding to look back at the efforts of officials down in Washington to tie gags into the mouths of those with ideas in regard to national defense.

It began with General William Mitchell, who was court-martialed because he told the truth about the air situation. He revealed that the air services are being throttled by the old-time Army and Navy machines who feared to lose if Air was given a fair show. Efforts to wreck Mitchell's career and personally ruin him immediately followed.

A few weeks ago Major General Charles P. Summerall was called back to Washington from an inspection tour because he said in an address: "I have seen German

prisoners housed in better quarters than our American soldiers now are occupying."

Another truth. Court-martial him!

And now Admiral Magruder. AERO DIGEST is afraid that we had better stop our nonsense about George Washington and the cherry tree when talking with our kids. If we teach them to tell the truth and they later go into the services they will certainly be court-martialed.

The Navy Department badly needs a house cleaning, and if it is not done by those within, it will certainly be taken in hand by the tax-payers who are tired of seeing hundreds of millions of their money being wasted by a group of high-hatted incompetents.

It is all rather nauseating!

THE SPIRIT OF YOUTH

CLARENCE D. CHAMBERLIN remarked to us, speaking of the generation on the threshold of manhood, "They'll pick up the knack of handling a plane just as our generation picked up that of driving an auto." Boys already are more air-minded than their elders. They are familiar with the principles of aviation and many have built and flown model planes. Various competitions arranged to develop youthful interest in aviation have resulted in a surprising number of really good airplanes.

Something about sky travel enthalls the spirit of youth. No one followed the transatlantic flight of Colonel Lindbergh or hung on his words during his triumphant tour of the United States with more rapt attention than did the boys. Perhaps it is a sacrilege to suggest it but even the fascination of the exploits of that idol of the juvenile mind, Babe Ruth, bids fair to be eclipsed by the new and growing interest in flying.

AN IMPORTANT INNOVATION

THE announcement of the West Coast Air Transit Company, that they would exact only the same fare plus Pullman that the railroad charges between Los Angeles and Seattle, is important. Although the newspapers failed to grasp the news significance of this new rate and only played up the fact that ten palatial parlor ships were about to go into commission, the fact that at last citizens could go by air as cheaply as by Pullman is of consequence.

Now that the ice has been broken, no doubt other companies will follow suit and as for the traveling public, one of the most important reasons why it has not patronized the airlines more extensively will have been removed. Of course, the advantages of making the journey in a fraction of the time required by surface travel will be sufficient to attract plenty of new business.

WHY HAVE A FIVE YEAR PROGRAM?

THE New York *American* is quite right when, as it considers the Five Year Air Program, it asks the question: "Why not have, instead, a two-year air program?" "No one," says the *American* "has advanced any reason except fiscal economy why the United States should take five years for the building of 1800 airplanes."

If the Navy needs 1000 planes and the Army 1800, why wait five years for them? "Let's have this adequate defense NOW," says the *American*, "and not at the end of 1932." That is good American horse sense.

We have manufacturers able to build them. The air services should get sufficient appropriations to train pilots to fly them. If we do need them, we'll need them badly and the quicker we get started the better off our national defense will be.

A NOD AND A WINK

HIGH above the pleasant countryside and the prosperous cities of the United States soared a silvered monoplane bearing four passengers and a pilot from New York to Chicago. They were flying in one of the latest types of planes made possible by man's inventive genius. As they flew they ate their lunch, prepared by Sherry, after which they lighted cigars and discussed this civilization of ours, which has given us so many wonderful things. They spoke of our great transportation systems, on land, on sea, and now, in the air; they spoke of radio, the telephone, the telegraph, of automobiles, of sanitary plumbing, of our schools and colleges which train our citizens not only to make a living, but also to consider ethics and live in peace and understanding with their neighbors, as civilized people should do.

These passengers were intelligent, prosperous, civilized men. They belonged to churches, country clubs, athletic and business associations; they had wives and children at home; they were good citizens, good men, who would have scorned to do a dishonest or even an unkind action. In short, they were completely civilized.

And they were speeding through the air toward a field memorial which a great nation has set aside so that we shall remember its soldier dead. They were speeding to see an ex-truck-driver batter an ex-hobo with his fists before an audience of 150,000 civilized men and women who had paid over \$2,000,000 to see the sight and who had wagered over \$5,000,000 on the outcome of the encounter.

SOMETIMES the bright torch of civilization is dimmed by the glaring flames of uncontrolled savagery, for, after all, our centuries of enlightenment are but a thin veneer plastered over the savage emotions and lust for blood which we have inherited from our cave-man ancestors. We were savages for millions of years; we have been civilized only for centuries.

We still love to battle an enemy for the possession of something—a championship crown and a purse, even a country. And those of us who are too weak to batter another into insensibility hunger to see some other and stronger animal do what we cannot do ourselves. We watch him and thrill with him at every blow. Subconsciously, we are fighting that fight, planting those blows, drawing that blood. We are giving our own savage emotions a joy-ride.

And like the individual—so runs the mass. And masses of individuals, welded into nations, still retain the psychology of the individuals of which they are composed. Hence wars, and wars, and more wars; hence oppressive political tactics; hence the need that one mass of veneered savages should arm themselves against another mass of veneered savages calling themselves a nation.

WAR is to-day man's greatest industry. The cost of the various wars in progress, the cost of maintaining the armies and the navies and the air forces of the world, the cost of war equipment for all of the nations, is so enormous that beside this industry of war such an industry as the steel business or the railroad business is a pygmy.

The following press despatch helps to explain why so

At an Emperor who lost his mind, an Army that lost its airplanes, and a gentleman who lost his pants

By

by Caldwell

much more money is spent on the business of killing people and preparing to kill people, than is spent on the business of educating them:

"Stuttgart, Germany, March 21.

Hans Stillz, age 14, stabbed his companion, Gustav Roupp, of the same age, in a fight over the ownership of an earthworm which both desired to use as fishing bait. Roupp, instead of going to church, where he is an applicant for confirmation, could not resist the ideal fishing weather. When the bait ran low, a quarrel for the last worm arose,

Stillz jabbing his knife into Roupp's heart, killing him instantly."

That despatch helps to show us why we must continue to spend billions of dollars and the services of millions of men preparing for war. For it discloses a fundamental quality of human nature the world over—the propensity to commit murder for the protection of, or the acquisition of, material possessions. Those boys, fighting over a worm, were acting exactly like two nations fighting for territory or commercial supremacy. The difference is only in the thing at stake; the principles are identical.

And this cannot be otherwise. For boys are young animals that become men; and men in the mass are what form nations. And no mass is of finer stuff than the materials of which it is composed.

NINE years ago, after four weary years of the most bloody war in history, the German army, beaten, starved, discouraged, turned its back on the blood-soaked ground of France and tramped sullenly homeward, to don its work-clothes and labor to pay the victors the heavy price of defeat. We who helped to drive them home, remembering the task it was, remembering the stubborn fight they fought, can meet them now with friendship and respect, and wish them well in their courageous struggle during these hard years after the war.

On that dark night when the Germans turned their backs on war and faced grimly the bitter burden of defeat, one German, huddled in the back of a speeding limousine, was being driven to Holland. He is the only German actually to gain distinction by running away. He was the Emperor Wilhelm II. He did no fighting in the war; he did no work after the war. He helped to betray the German people; then ran away to escape the consequences of his betrayal.

Now he telegraphs to Field Marshal August von Mackensen, a courageous old soldier who did not run, "The glorious fruits of these wars are now unhappily destroyed by discord, and must be fought for again. *Gott Mit Uns, Wilhelm, Rex.*"

Wilhelm II is an old man with a withered arm and a tortured mind, the savor of whose life has turned to dust and ashes in his mouth. As he potters about aimlessly behind stout iron bars in an alien land, he ponders many things. If he had been a man of any mental ability the terrible lessons of 1914-1918 would have taught him that no war produces glorious fruit, and that war wreaks destruction alike on vanquished and victor. But he is a stupid and bigoted and embittered old man; and he can learn nothing. So there he wan- (Continued on next page)

ders, sending out to the world the mad thoughts of a crazed mind.

From the castle grounds at Doorn, Holland, he sent another telegram to the old guard of his former army. He did not say that he was virtually a prisoner, afraid to venture out lest someone put an end to a life that, after all, now must be a burden to him. He said, "God with us. Forward!"

Poor crazy old man, wandering inside his bars like a caged beast; while curious tourists peer at him as they would at a hyena in a zoo! He thought that God was with him in 1914. And he did not go forward. He went backward. In his confident assertion that God was with him, he overlooked the remark of General Grant—"God is on the side that has the heaviest cannon." History has proved that statement to be true. And in the next war history will prove that God has switched to the side having the best Air Defense.

Wilhelm II is an old man. Soon he will be dead. To-day he is harmless and helpless—a thing of no consequence—mere rubbish tossed on the dump-heap of world politics. We have in Washington to-day at the head of National Defense men as ill-fitted to administer that defense as would be old Wilhelm II. They are old men, with old men's ideas. "The Navy with us. Forward!" they mumble. "The man with the musket on his shoulder. Forward! God with us!" So they mutter, these old, old men, almost in their dotage. Forward! And the tragedy of it is that they believe what they are saying.

So does Wilhelm II.

"**WILL PLAN DISARMING OF NATION'S CRIMINALS!**" reads a headline. Certainly. Why should the criminals be allowed an advantage over the Air Forces?

EVERY now and then some German pleads that the war guilt should be solved. Who started it, anyhow? he cries.

Who started the last war is not important, except to the historian. What is important, however, is this: Who is going to be responsible for losing the next war?

Little seeds of distrust, of hatred, of prejudice, grow into that sturdy weed called war; it flourishes on the thinnest soil.

The airplane seems to be the best implement yet designed to combat this war-weed. Our old men do not know that—will not learn it. But it is so.

"All God's chillun got wings!" says the old negro spiritual. And the chillun with wings will win. And they will win by a very large margin in the next great conflict.

As to who won the last war, Bruce Bairnsfather declares that it was won by Sergeants and Swearing. If that is so, and I believe it is so, what a wonderful instructor my friend Bill Crenning would have made!

THE Nobel Prize for optimism goes to the Membership Committee of the National Aeronautic Association. They've been sending form letters to me inquiring when I am going to renew my membership and send them five dollars. I can't, at the moment, think of any better way of saving five dollars than by not sending it to the N. A. A.

Those birds aren't going to give their personal politico-social complexes a taxi-ride around Potomac Park on my poor little five bucks. I'd help aviation as much if I took the V and fed it gently to a fish in the New York Aquarium.

A YOUNG semi-pilot who had tried to get a Department of Commerce license and who had been turned down by the inspector for good and sufficient reasons, de-

cided that he'd better get an N. A. A. license. He asked who could examine him for that, and was told, "Go and ask Cy Caldwell—he'll be glad to examine you." This advice came from one of the wags who knew how I had been panning that N. A. A. absurdity.

The lad came over to me, and I explained in detail just what I thought of that N. A. A. license. And as the wretched deception is still being sold to the nit-witted, I see it is time for me to go after it again and strip the mask of camouflage from it.

The N. A. A. license, issued by authority of the F. A. I., is of no use except as an admission card to a race sponsored by the N. A. A., who insist that a contestant hold one of these things—for which the N. A. A. soaks him five dollars—before he can compete. As the Department of Commerce license is the only one that enables a pilot to engage in interstate commerce, and as it is the only license demanding a strict physical examination, the N. A. A. license is now, for all practical purposes, as extinct as the dodo. The fact that a man holds one, let me inform those who are desirous of flying as a passenger with an N. A. A. licensed pilot, does not guarantee that the pilot is not about to drop dead from heart failure. He has not been examined by a doctor, nor does the license require him to be examined.

Before the Department of Commerce licensed pilots, the N. A. A. license served well enough—though it never should have been issued to anyone unless he had passed a physical examination. To-day the thing is worthless—except as a race ticket.

If you who read this are a passenger, or are going to be a passenger in an airplane, let me urge that you trust yourself only in a Department of Commerce licensed plane, and with a pilot licensed by the Department of Commerce. Ask the pilot to show you his license. You will not insult him; he will be glad to display his license and prove to you that he is licensed to carry you into the air.

The man without a license, or with the foolish N. A. A. license, may also be a very good pilot. But his license does not guarantee it. It does not guarantee that he is healthy or even can see to land. The Department of Commerce inspectors are fitted to judge whether or not a pilot is entitled to a license. If he has a transport or an industrial license, he is a good pilot.

You would be well advised to let the Department's inspectors choose your pilot for you—and to hang a license on him as proof that they approve of him.

Now, let me hear no more of this N. A. A. asininity. I'm an old man and growing very peevish. I hate to be annoyed.

THE good Bishop of Ripon suggests that the world is going too fast and that humanity would be benefited if aviation, wireless, television, and the like were advanced no further than they are at present. If every physical laboratory and chemical laboratory were closed for ten years, says the good Bishop, the sum of human happiness, outside of scientific circles, would not necessarily be reduced.

There is something vaguely familiar about this thought. I seem to recognize in it the general mental attitude of the Navy toward aviation; and also of my old grandmother toward automobiles. Grandmother used to say that four miles an hour along a road was quite fast enough for her—she didn't even approve of the horse trotting, for she thought it wore him out too fast. She was Scotch. And the Navy—at least, the older and more brittle members of it—seem pretty content with about 25 knots. They're not even very partial to the fast destroyers. What they love

(Continued on page 613)



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And Nitro-Valspar *is making history*

FIVE of the Pacific Air Transport planes—three Ryans, one Roamair and one Swallow—are protected with Nitro-Valspar, concerning which that company's Superintendent says:

"I like Nitro-Valspar because we can dope right over it. It is very quick to dry and once a ship is finished with Nitro-Valspar the finish remains for an indefinite period."

Men who are in the best possible position to judge a finish—under the hardest of service conditions month in and month out—like one which without alibis stands the gaff.

That's reason enough for choosing Nitro-Valspar.

NITRO-VALSPAR

The Valentine all-lacquer finish

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WINDS beat, sun scorches, storms rage, fogs attack; but Valspar has survived thousands of battles with the elements—and always comes through smiling.

That's why Valspar is the most widely used airplane finish today, —and has been since the earliest days of flying.

That's why Valspar is used on the planes of the Pacific Air Transport which fly one of the longest and most trying air mail routes in the world: from Los Angeles to Seattle.

At left—Pacific Air Transport pilot about to take off from Los Angeles at midnight in his Nitro-Valsparred plane for a 14-hour trip to Seattle



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NEW METALS FOR AIRCRAFT

THE two most important factors in the design and construction of the modern airplane are safety and weight. In the development of aircraft the aim has been to make the airplane absolutely safe and at the same time, by decreasing the weight, increase its speed and ease of handling or maneuverability in the air.

The development of metals for use in airplane construction has followed these lines, with two objects in view; (1) to develop a stronger metal which will be no heavier than the material already in use and (2) to develop a lighter metal to substitute for a heavier one of equal strength.

Airplanes are now developed to the point where they are as safe or safer than any other modern means of transportation, hence research in metals in the last few years has been almost solely with the object of reducing the weight and at the same time increasing the active life or durability of the plane. The factor of cost has been relatively unimportant in the design and construction of military aircraft, but is becoming very important as commercial flying attains more prominence. The cost of the metals entering into aircraft construction is but a very small percentage of the cost of fabricating and assembling them into the finished airplane, hence in research in metals practically no cognizance has been taken of their cost.

A discussion of recent development in metals for airplane construction may be conveniently divided into two main heads: (1) the structure of the airplane proper including the body, or fuselage, as it is called, and the wings; and (2) the power plant, that is, the engine and propeller.

NEW METALS FOR THE AIRPLANE

Up to and including the war period the universal material for the construction of the airplane proper was wood. Practically the only metals used were in the wheels and landing gear and a few fittings in the fuselage and wings. In the modern plane the fuselage is constructed of seamless steel tubing welded at the joints and braced at fre-

By F. T. Sisco
Chief, Metallurgical Laboratory
Air Corps, Wright Field

quent intervals with steel wires of high strength. The result is a fuselage or body that is practically indestructible.

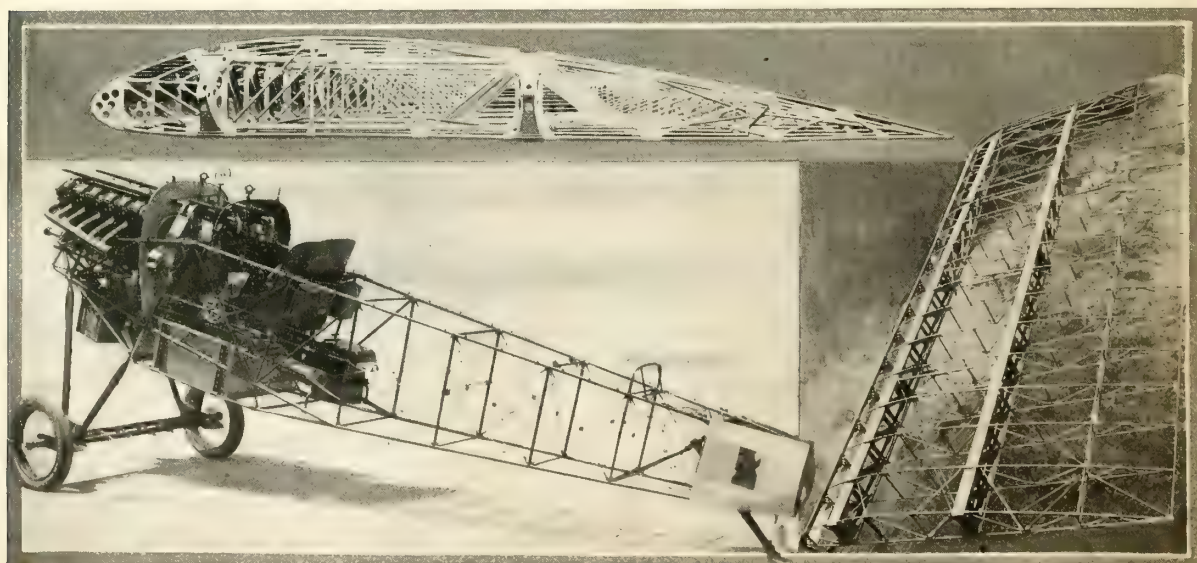
The most recent development in the construction of the fuselage is the substitution of an alloy steel tubing for the tubing of common steel, ordinarily used. As it is not safe to reduce the size of the tubing used in fuselage construction the substitution of the alloy steel has not reduced the weight, but it has increased the strength more than fifty per cent.

The alloy steel tubing now used in the fuselage of the modern airplane represents one of the most recent developments of the steel maker's art. It is a steel to which have been added the elements chromium and molybdenum. By the proper treatment during manufacture and fabrication, this chromium molybdenum tubing has a strength of 90,000 pounds per square inch compared with 50,000 pounds per square inch for the common steel tubing ordinarily used.

An airplane fuselage with the engine mounted in position is illustrated below. The wings have not yet been attached. This shows the skeleton of seamless alloy steel tubing braced at regular intervals with the same kind of tubing welded to the horizontal members and with the additional bracing of steel wires.

In wings, metal has supplanted wood only in the larger airplanes—transports, bombing planes, and the like. The metal used for wing spars is an alloy containing about 93 per cent aluminum, 4 per cent of copper and less than one per cent each of iron, silicon, manganese and magnesium. This alloy, the result of brilliant German metallurgical research is known by the trade name duralumin. Its weight is only about one third of steel and after the proper treatment, it has a strength of about 60,000 pounds per square inch, or the equivalent of ordinary steel.

Although duralumin is seven times as heavy as the average wood, it is so much stronger that it can be used for wing construction without sacrificing any weight escape in the case of small high (Continued on page 618)



Official Photographs, U. S. Army Air Corps.

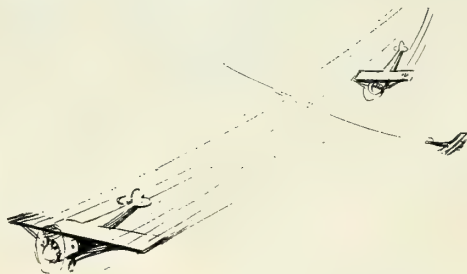
A completely equipped all-metal airplane fuselage; end and top view of wing framework with beams and ribs of metal.

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"THE DRIFT INDICATOR"

By William A. Rogers

THE AERO DIGEST mat at the office door has written in large letters across the face of it the word "WELCOME."

Everyone in the aircraft industry and those men who are doing valuable work in the development of aeronautics by their enthusiastic work in the creation and operation of airports are invited to drop in and see us. Make our office your headquarters while you are in the city.

Among our recent visitors were:

Jack Frye of the Aero Corporation of California, who flew in to pick up a new plane which he flew back to California.

Billy Parker of the Phillips Petroleum Company, Tulsa, Okla., stopped in one afternoon and dashed off again to keep a number of business appointments.

Fred L. Foster, who comes from the same country and who has been representing the Chestnut and Smith Corporation, manufacturers of Naturaline, has just left N. Y. for a business trip to the West.

Clarence Chamberlin of transatlantic flight fame.

Mr. Horned of the Travel Air Manufacturing Corporation.

R. C. Schrader of the Alexander Aircraft Company, sales promotion manager for the Eastern territory. He has just completed a tour of the Middle-Western territory and is thoroughly covering all of the Eastern states.

A. W. Van Valkenburg of Honolulu.

E. H. Holterman, airport engineer and ex-army pilot instructor, Woodstock, Vermont.

Major A. W. Black of Hamilton, Bermuda.

Captain Eric Densham, Bristol engine expert, of England.

Bill Stout came in from Detroit and radiated some of his enthusiasm; he leaves no doubt as to the future of Ford aircraft.

H. C. RITCHIE, aviation lighting specialist of the General Electric Company, sent in a folder containing 25 pages of condensed information on airport lights and lighting which will be extremely valuable to airport operators and builders. The folder corresponds in size and punching to the "Airway Bulletins" issued by the United States Department of Commerce and will serve as a convenient cover to contain those frequently issued.

REGULAR use of the company-owned airplanes for closer contact between the Detroit and Cleveland plants and with customers in many cities was inaugurated recently by Thompson Products, Inc., automobile and airplane parts manufacturers. E. G. Thompson, vice-president of the company and sponsor of the plan, purchased the first company machine, a three-passenger Laird biplane, in Chicago and flew it back to the Cleveland plant in two hours and thirty-five minutes. Other machines will be added as required and hangar space has been arranged for the planes at the Cleveland municipal air field.

Mr. Thompson predicts that during the next few years automotive manufacturing concerns will lead others in adopting airplanes as a more efficient means of transportation, both for emergency shipments of parts and for cutting down on the travel time of executives and sales representatives.

LIEUTENANT JOHN ISEMAN, who has been Executive Officer at the Naval Reserve Air Station at Rockaway Beach, New York, was appointed Commanding Officer this month to succeed Henry S. Kendall, who was transferred to the Torpedo Plane Squadron at Hampton Roads, Virginia.

A complement of new and advanced types of Navy seaplanes is expected at the Air Station within the next few months.

"LIFT Up Your Eyes!"

The first advertisement of a large scale campaign now being carried on by the Ford Motor Company to make America more air-minded and to emphasize the size and importance of the aircraft industry had as its title: "Lift Up Your Eyes!"

It is one of the most impressive advertisements on the subject of aviation that has ever been published. The campaign will show the many uses of aircraft when operated for business purposes and on a business basis.

There is one paragraph which particularly stands out that we quote as follows: "Is there another epoch in all history that has been so strong in growth from birth to universal achievement? . . . So tremendous in its nature and accomplishments? . . . So rich in promises for the future?"

Many of the mistaken ideas that the public entertained a few years ago about flying and fliers in general have already disappeared. We believe that national advertising of this sort will exert a powerful influence in placing commercial air service at the disposal of the nation.

H. A. LINN of the Linn Manufacturing Corporation of Morris, New York, recently purchased a Stinson-Detroiter and spent a week touring the New England states. He visited, among other places, Old Orchard Beach, Mass., where Miss Grayson's party was preparing *The Dawn* for the transatlantic flight. Aerial holidays are becoming more and more frequent.

MEYER DAVIS, head of the Meyer Davis organization which is composed of 1500 artists engaged in fulfilling musical engagements, has announced that he is establishing an aerial transport service for theatrical units. It is estimated that although the cost of aerial transportation at the present time, including baggage, will be somewhat higher than railroad fare, the time and money saved in unprofitable long trips and one night stands at small towns will more than make up for the additional expense. It is estimated that many thousands of

dollars will be saved by this organization alone by the use of aircraft.

THE Kardex Institute, which is devoted to business education and research, is doing valuable work in printing and distributing an excellent discussion by W. Irving Glover, Second Assistant Postmaster General, the title of which is "How Air Mail Aids the Business Man." He cites, for example, the experience of the city of Milwaukee as follows: "In the City of Milwaukee, for instance, a large business concern, an extensive user of the air mail, states that formerly they frequently found themselves at a considerable disadvantage in securing contracts, both in the east and the west, owing to the fact that their competitors were more favorably located. Air mail, however, has placed them on a basis of equal advantage with firms nearer the prospects." It finishes up with the following paragraph, which we believe is very important at this time: "The greatest need of the air mail to-day is not a better or speedier plane; it is not a question of a single or three-motored ship nor the capacity for a greater pay load, but it is simply this—that a great universal advertising campaign should be inaugurated to sell the air mail to the business man and the public in general. The business of air transportation, commercially speaking, is comparatively new and has to be sold to the people the same as a new toilet soap, a breakfast food, or a new kind of chewing gum."

TWO pioneers of aviation—one the designer and builder nineteen years ago of the first tractor biplane, a type universally used to-day, and the other the only consistently successful operator of traveling commercial airplane squadrons in the history of the industry—have realized a dream conceived in the infancy of flying by combining resources for the manufacture of airplanes on a quantity production basis.

The men, Charles Healy Day, the designer of the famous Day tractor in 1909, and Ivan R. Gates, who has the unique record of having taken a million persons into the air in his years of operation first met in that year when they were both attempting to gain a foothold in the industry. Both were practically penniless, but hoped, some day, to manufacture airplanes.

Eighteen years later, with the resources at hand because of their individual success, they have organized the Gates-Day Aircraft Corporation, and already have laid plans for manufacturing motors and airplanes on a large scale. Designs for a \$100,000 factory at Teterboro, N. J., are being considered. A temporary factory has been leased pending the completion of the new building so that production on a series of sport, all-purpose, and large passenger planes will begin immediately.

IF your town has a railroad station it is almost up-to-date. See that it gets an airport.

At Over 280 Miles per Hour Meyrowitz Luxor Goggles Work Perfectly



Lindbergh



Chamberlin



Byrd



Acosta



Balchen



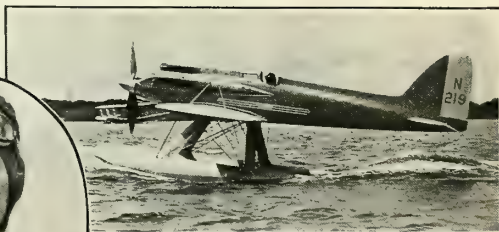
Noville



Maitland



Hegenberger

Lieut. S. M.
KinkeadLieut. O. E.
Worsley, who
came in second.

Lieut. S. N. Webster and his Supermarine Napier S-5 Monoplane, won the Schneider Cup at 281.488 miles per hour for Great Britain. He depended on Meyrowitz Luxor Goggles. Note that he is entirely exposed to the wind.

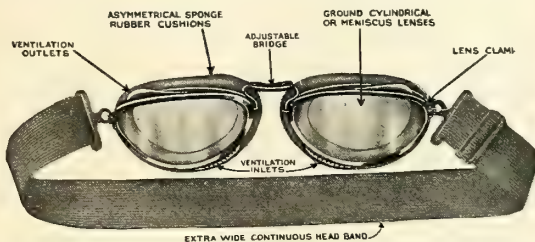
Lieut. S. N. WEBSTER, winner of the Schneider Trophy on Sept. 26th, 1927 wore a stock pair of Meyrowitz Luxor Goggles — U. S. Air Service Model 6. Faster than man ever flew before — breaking all records — these goggles met every requirement of this gruelling test.

No Air Seepage

Clear vision, perfect fit and comfort — *absolutely no air seepage*. Lieut. Webster flew with only the protection of his goggles. His team mates Lieut. O. E. Worsley, who came in second and Lieut. S. M. Kinkead also wore Meyrowitz Goggles. This, with the fact that practically all well-known aviators prefer and demand Meyrowitz Luxor Goggles is conclusive proof of their superiority. Note the prominent men on this page who use them.



Lieut. Alford Williams and his 24 cylinder X shaped motor speed plane in which he expects to do 300 miles per hour. He uses Meyrowitz Luxor Goggles.



U. S. Air Service Model 6 (Illustrated) \$10.75 up.
No. 6 Regular Model \$9.75 up. No. 5 Model \$7.50 up.

Exclusive Features

- No air seepage
- No fogging
- Sponge rubber cushion
- Ventilated thru frame
- Replacable lenses
- Optical precision
- Perfect comfort
- No painful pressure
- Adjustable bridge
- Prescription lenses
- Unobstructed vision

Write for
descriptive
circular.

E. P. Meyrowitz
INCORPORATED
Established 1875

Contractors
to U. S.
Government



Dept. A, 520 Fifth Avenue at 43rd Street, New York City

MINNEAPOLIS

ST. PAUL

DETROIT

LONDON

PARIS

Say you saw it in AERO DIGEST

PROGRESS OF DISTANCE FLIGHTS

FRANCE-SOUTH AMERICA

FOR the first time the South Atlantic has been spanned in a non-stop flight. Dieudonne Costes and Joseph Le Brix, hopped from St. Louis, Senegal, at 6:23 a.m. October 14, and landed at Port Natal, Brazil, at 11:40 p.m. that night. Their elapsed time was 19 hours, 17 minutes, for the 2000-mile trip, showing their average speed to have been over 100 m.p.h. (There is 2 hours' difference in time).

This splendid feat has never before been accomplished. Although the South Atlantic has been crossed by air six times, these flights were broken either by starts from the Cape Verde Islands or by landings on the Island of Fernando de Noronha, about 140 miles off the Brazilian coast.

The first successful flight across the South Atlantic was made in 1922 by the Portuguese aviators, Captains Sacadara and Continho, from Lisbon to Brazil. Commander Ramon Franco of Spain again flew it in 1926. Commander Francisco de Pinedo of Italy and Commander Sarmiento Beires of Portugal flew across this year. Captain Saint Roman failed in the attempt as did Mouneyres and Petit.

Costes' plane, the *Nungesser-Coli*, is a Breguet Army plane, powered with a 550 Hispano-Suiza engine. It carried 620 gallons of gasoline and a large quantity of mail and baggage. It was fitted with a wireless sending and receiving instrument.

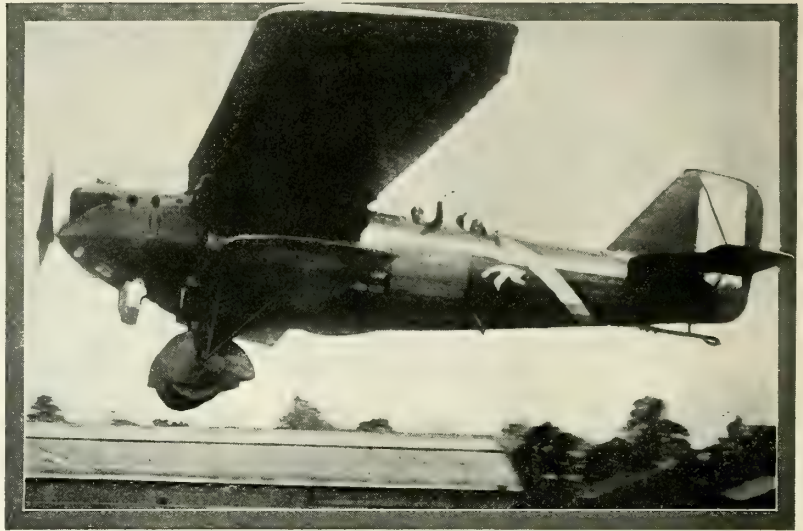
Costes and Le Brix flew from Le Bourget, Paris, to St. Louis, Senegal, the first stage of their journey on October 11, a distance of 2700 miles which they made in 25 hours and 30 minutes.

From Port Natal the Frenchmen flew to Buenos Aires stopping at Caravellas and Pelotas, completing a flight of more than 6000 miles. They intend visiting the United States before returning to France.

GERMANY-AMERICA

THE tri-motored Junkers plane D-1230 took off from Norderney, Germany, at 4:46 p.m. October 5, for the United States by the way of the Azores. Piloted by Frederick Loose and with Karl Loewe, mechanic, Ralph Starke, radio operator, and Lilli Dillenz, Viennese actress, passenger, the plane landed at Amsterdam, Holland, 130 miles distant, that evening.

The next morning the D-1230 left for Lisbon, Portugal, but was forced down in



P. & A. Photo.

The French Breguet plane flown to South America by Costes and Le Brix.

the sea 80 miles north of Lisbon off Cape Vera Cruz, near Torres Vedras. In answer to their SOS the Portuguese Government sent a warship to their aid, which towed them to Lisbon.

On October 13, the plane hopped off for the Azores but landed soon afterward due to engine trouble. At daybreak the next morning, in the face of bad weather which afterward cleared, they continued their flight, arriving at Horta, Island of Fayal, the Azores, at 2:17 p.m. October 14. This hop of 1095 miles was made in 10 hours.

Weather conditions have held them at Horta as the plane cannot take off in the heavy ground swell with the heavy weight it is carrying. They intend flying to New York by way of Newfoundland.

The D-1230 was originally built as a 12-passenger plane, but the cabin has been converted into a fuel storage compartment. It carries a complete receiving and sending wireless set and the most modern scientific equipment. On board are the two sacks of mail which were originally started for the United States on the *Bremen* and her sister plane, the *Europa*.

The flight is being backed by the Hamburg-American Line who hope to develop a regular air service between the United States and Germany.

THE Heinkel seaplane D-1220 hopped off at 1:21 p.m. October 12 from Warnemünde, Germany for Amsterdam, Vigo, Spain and the United States. The pilot of the D-1220 is Horst Merz, German war aviator; the radio operator, Wilhelm Bock, a war veteran; the mechanic, Fritz Rhode, who served in the American Army and formerly employed by the Packard Company.

The seaplane, which was constructed by Dr. Ernest Heinkel, the widely known German airplane designer, is a low-winged monoplane, equipped with pontoons and powered with an American Packard 800 h.p. engine.

The expedition is being financed by the Hamburg-American Line, who are also backing the Junkers D-1230 flight for the purpose of developing transatlantic air service.

At the outset of its flight the D-1220 developed radiator trouble. A leak forced it to descend at Brunsbüttel, Germany, 130 miles from the starting point, a few hours after its hop-off. The next day the plane was flown to Wilhelmshaven for repairs and on October 14 completed the first lap of its flight, landing at Amsterdam, Holland.

From Amsterdam the D-1220 flew to Vigo, Spain, a distance of 1000 miles, on October 16. It made the 250-mile hop from Vigo to Lisbon on October 18.

Taking off for the Azores on the morning of October 21, the Heinkel seaplane was forced to turn back to Lisbon after going but a short distance by a leak in the oil tank.

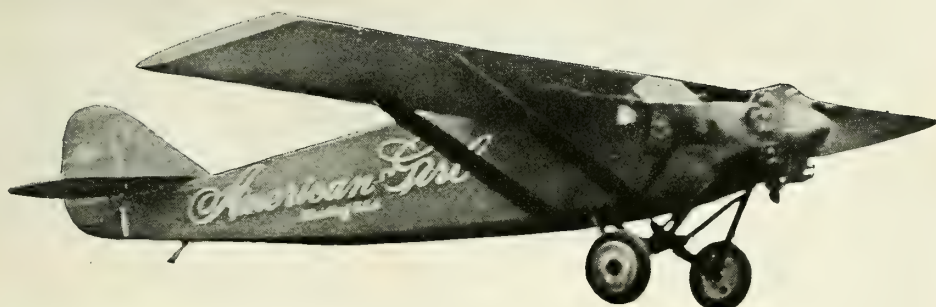
LIEUTENANT OTTO KOENNECKE left Bagdad at 7 a.m. September 30 in his Caspar biplane *Germania* for Benderabbas, Persia, enroute to the United States by way of the East, but made a forced landing, breaking his rudder and tail skid.

When the repairs were made the *Germania* attempted to continue its journey. Shortly after the take-off the plane crashed.



P. & A. Photo.

The German Heinkel monoplane with a Packard engine.



RUTH ELDER
Chose
Silvertowns!

When Ruth Elder hopped off on her trans-Atlantic flight, she knew that one worry had been eliminated—for her plane, "American Girl," was shod with Silvertowns.

She knew that those first critical seconds, before the plane took the air, were a supreme test of tire strength—and she underwrote the safety of her start with the equipment favored by the majority of fliers.

We are proud of her achievement—
and of her confidence in Silvertowns!

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

FOR SAFE HOP-OFFS AND SMOOTH LANDINGS

FRANCE-AMERICA

GIVON and Corbu, pilots of the Farman *Bluebird*, have abandoned their flight across the North Atlantic this year. They are back at their regular work of piloting commercial planes on the Paris-Cologne route, and at a later date may attempt to break the distance record in another direction, reported to be to New York by way of Dakar, Africa, Pernambuco and the West Indies.

FRANCE—INDO-CHINA

LEUTENANT CHALLES and M. Rapin left Villacoublay on October 11 on a flight to Indo-China. They reached Saigon, Indo-China, a distance of 11,110 kilometers, on October 20. Their Potez plane is fitted with a Lorraine engine.

UNITED STATES-DENMARK

THE DAWN, Mrs. Frances Grayson's Sikorsky twin-motored amphibian, was forced to turn back to its point of departure at Old Orchard Beach, Maine, on October 23, after its hop-off for Copenhagen, Denmark. This was the third time her plane had attempted to fly across the Atlantic.

The ship, with Wilmer Stultz, pilot, Brice Goldsborough, navigator, and Mrs. Grayson, passenger, arrived at Old Orchard on October 10. Bad weather, minor repairs and adjustments to the ship delayed them day after day, until on October 17 the amphibian took-off on its first attempt over the sea. It was found to be too nose-heavy to maintain altitude due to having too much gasoline put too far forward in the boat and when



P. & A. Photo.

"The Dawn," Mrs. Grayson's twin-motored Sikorsky amphibian.

barely 20 feet above the water, 260 gallons of gasoline had to be dumped. *The Dawn* then rose and circled back to the beach.

The second start was on October 22. The plane was again unable to hold altitude and once more 260 gallons of gasoline were dumped and they were forced to return to the beach after a few minutes' flight.

Early the next morning, 350 pounds lighter, *The Dawn* took-off in 63 seconds after a mile's run down the runway. She lifted gracefully and headed due east. When 500 miles out at sea, off Sable Island, N. S., engine trouble developed in the left engine and in addition to this weather was thickening ahead. It was, therefore, decided to turn back. Ten hours later *The Dawn* was back on the sand.

The flight has been postponed until next spring.

UNITED STATES-AUSTRALIA

THE *Southern Cross*, a trimotored Fokker monoplane, will soon hop off from Oakland Airport, California, for Australia via Honolulu. The plane was flown from Tacoma to San Francisco on October 12 and is being groomed for the flight, which is scheduled to begin about November 10.

Captain C. E. Kingsford-Smith is flight commander; Keith V. Anderson, pilot; Charles T. P. Ulm and William A. Todd, navigators. All four are Australians.

The 9,600-mile journey will proceed by the following stages: Oakland to Hawaii, 2,439 miles; Hawaii to Rabaul, New Britain, 3,800 miles; Rabaul to Lae, New Guinea, 350 miles; thence to northern Australia, 950 miles; after that overland to Melbourne, 2,000 miles.

"For Safe Descent"

The RUSSELL "LOBE" PARACHUTE

Just as it saved Valentine Gephart's life

It may save YOUR life, some day!



Descriptive
folder
on request



Seattle, Wash.
October 3, 1927.

Russell Parachute Company,
1202 Kettner Blvd.,
San Diego, California.

Gentlemen:

Replying to your inquiry regarding my descent in a Russell Cotton Lobe seat back parachute, which I purchased from you, I am pleased to advise that I owe my life to this most efficient device.

While flying a Woodson M. 6 Monoplane from Napoleon, Ohio, to New York City on Friday, September 16th, my motor cut "cold" at two thousand feet over the hills near Grampian, Pennsylvania.

To land on the hillside, with the plane fully loaded, would have undoubtedly caused a fatal crash. I jumped at nine hundred feet, cleared the ship, and pulled the ring. The Russell parachute opened within fifty feet, and I landed safely in the woods nearby.

Very truly yours,

(Signed) VALENTINE GEPHART.

100% Manually operated. No rubber bands.
No springs. No dangerous pilot chute.

Made of Silk or Cotton
\$250 to \$350

Complete with carrying bag.

RUSSELL PARACHUTE COMPANY

1202 Kettner Blvd.

San Diego

California



Publicity *alone* won't do!

AVIATION, even more than most new industries depended upon publicity to put it across, and very naturally too. Flying was interesting news. Flying still is news but flying is now becoming air transport—and air transport is a business. No longer can publicity alone be expected to promote Aviation.

What is needed more than anything else is organization of effort. This applies throughout the industry. Of course Aviation is not entirely out of the pioneering stage but it is developed to a point where the best of modern technique should be employed.

Greater advance has been made on the technical side than on the marketing side. Our air-mail system is the largest in the world and operates almost perfectly, but it has not yet been sold effectively to business, much less to the public.

Coordination of effort—manufactur-

ing, operating, financing and selling—in the industry as a whole as well as individual concerns is imperative. And particularly coordination of selling effort—sales promotion. Unless all the known methods are considered, the right methods chosen, and all the parts coordinated, then Aviation will continue to suffer from growing pains.

Chief among the modern business forces that Aviation must employ is advertising in its broadest and most economic sense. Not only have we applied ourselves to this subject, but we have studied commercial Aviation and air transport steadily for years. We have grown up with it, worked in it and believe in it.

We invite a discussion of this important subject with any manufacturers, operators or individuals who are financially interested in Aviation. Our ideas are concrete—definite enough to justify your interest.

Reimers & Osborn, Inc.

ADVERTISING

285 MADISON AVENUE, NEW YORK

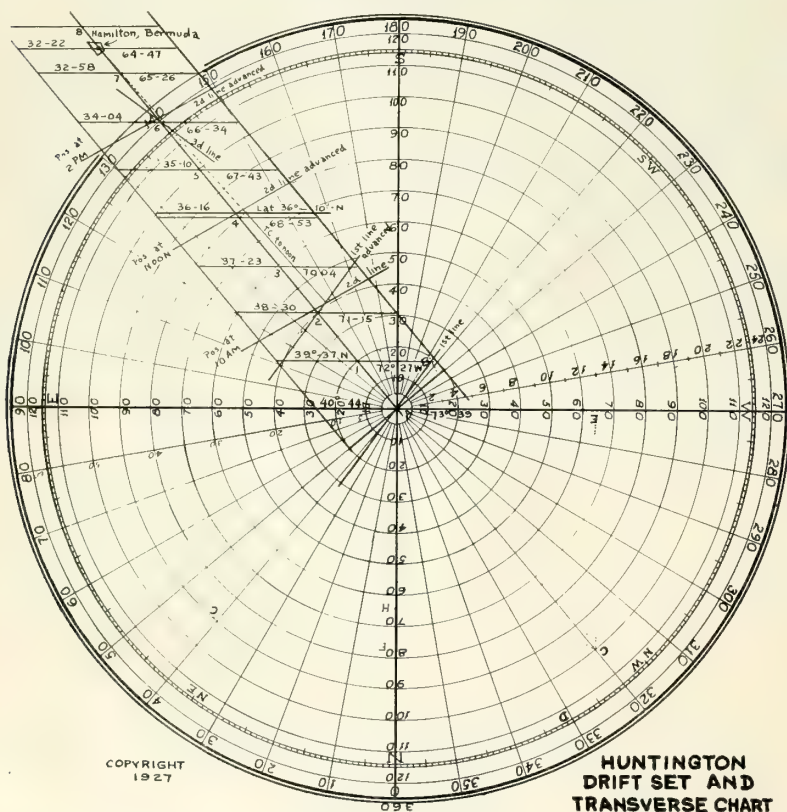
AVIGATION

By Hubert S. Huntington
President Avigation School of America

AN avigator in a plane must be a superior navigator to a navigator on a ship because his methods must be quick but yet accurate. As a plane moves at much greater speed than a steamship, speedier methods must be used, and just as much navigation is necessary on an airplane as on a steamship making the same destination. On the sea there are no land marks to guide the aviator and therefore he must revert to navigation. Even in making a destination over land he can follow the shortest distance by using navigation. He will not only save time but will get a greater cruising radius from his plane by covering the shortest distance possible. He must put just as much confidence in his instruments as a navigator on the sea

the compass course, deviation and variation, but the correction for drift will have to be applied when in the air as it is hard and most times impossible to accurately calculate from the ground the angle and force of the wind for any height.

The greater part of the navigation must be done before the plane leaves the ground, and then observations of the heavenly bodies such as the sun, moon, stars or planets are made to check the position plotted on the chart or to see how much the plane is from the supposed position, and if necessary a new course must be plotted. The avigator in the air must revert to the same methods, with a little difference to make avigation quicker, as the navigator on the sea. All distances must



and steer by his compass instead of recognizing land marks and flying only by dead reckoning.

In this article I show some of the navigation and charts which can be advantageously used and which would be essential in navigating an airplane from Mineola Field, New York, latitude 40°-44' N., longitude 73°-39' W. to Bermuda in latitude 32°-17' N., longitude 64°-46' W. on December 1st, 1927. Distance 663.2 knots, or 762.7 statute miles. It is necessary to determine the true course and distance and plot a position approximately on the chart for every hour in the air and the correction applied to make

be calculated in nautical miles to confirm with latitude and longitude, and then changed into statute miles if necessary. All calculations in navigation are figured in nautical miles and not in statute miles, one knot equal to 6,080 feet, and one statute mile equal to 5,280 feet. One nautical mile equals one minute of latitude and therefore it is easier to figure in nautical miles and then transpose. One knot equals 1.1515 statute miles.

The distance on Rhumb line true course is determined and is then plotted on the chart (see diagram), and is more practical than great circle in this case as there is only a difference of 1.2 knots or 1.4 statute miles.

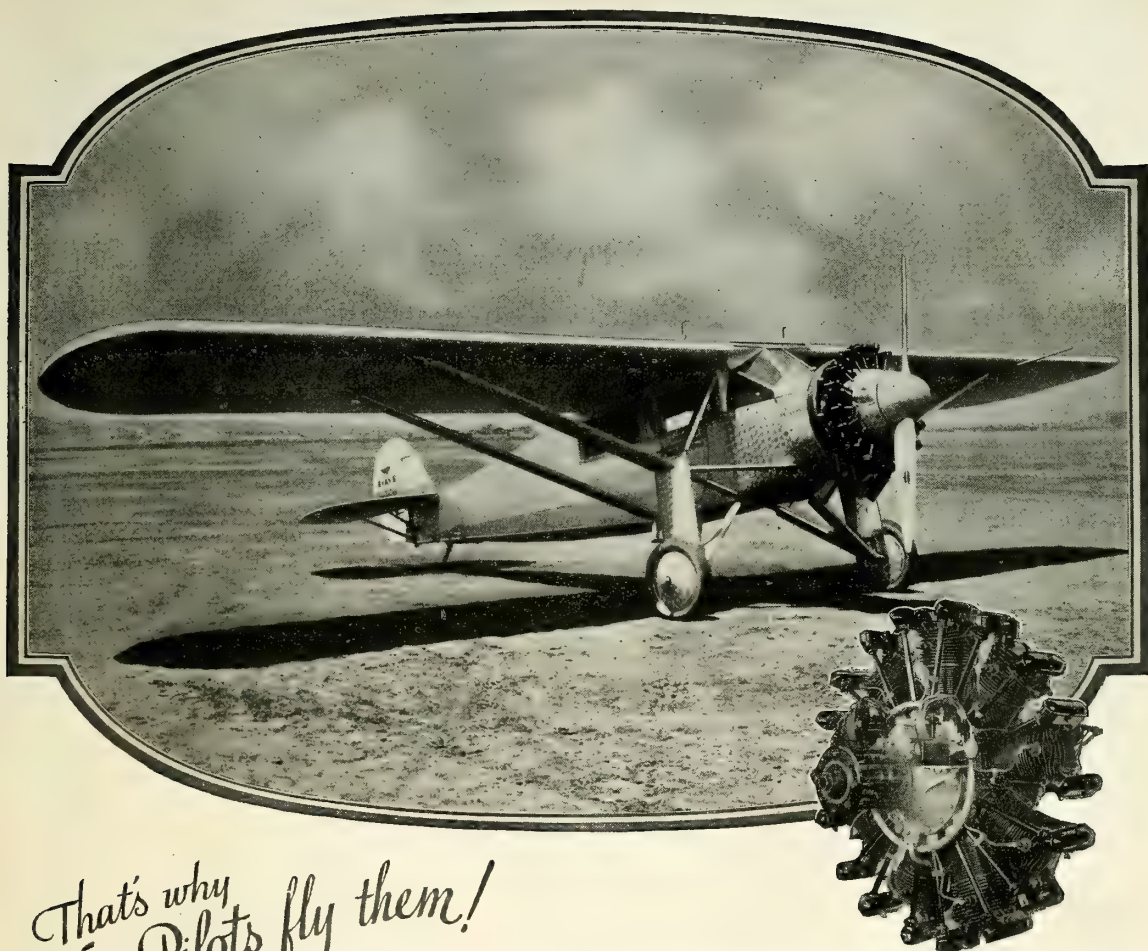
On the great circle the avigator must change his course 1 degree every 133 knots or 153 statute miles from the time of departure (Mineola), to arrival at destination (Bermuda) where he holds the same true course on Rhumb line (140 degrees). The true course is 140°—true, variation is 11°—West, distance 663.2 knots, speed of plane 87 knots or 100 land miles per hour. Estimated time from departure to destination 7h.—30m., ship to leave at 8:00 a. m. or 13h.—00m.—00s. Greenwich Mean Civil Time, and arrival about 3h.—30m. p. m. Eastern Standard Time, or 8h.—30m. p. m. Greenwich Mean Civil Time. It will be more convenient to navigate from Greenwich Mean Civil Time (Chronometer Time) than by Eastern Standard Time (Local Mean Civil Time of Mineola). To get the local apparent time of the plane take the time from the chronometer (Greenwich Mean Civil Time) and apply equation of time to it; then apply the longitude in time to get the local apparent civil time at the plane.

The plane takes off at 8h.—00m. a. m. L. A. C. T. Calculate a line of position for this time. First line is calculated to be 216 degrees at time of departure, and carried along on the true course to 10h.—00m. a. m., when another line of position is calculated and the fix is obtained. The aviator drops to 200 feet if possible and takes an observation of the sun and finds the altitude of the sun to be 23°—32', sextant altitude, dip of the sea horizon for 200 feet is 13m.—51s. (—) minus, semidiameter of sun 16m.—12s. (+) plus, refraction and parallax 2m.—05s. (—) minus gives a total correction 0m.—20s. plus, the observed altitude of the sun plus the correction 0m.—20s. gives true altitude of sun 23°—32'—20" and calculate a line of position. The 2nd line of position is found to be 240 degrees, intersects first line advanced 174 knots or 200 land miles at latitude 38°—30' N., longitude 71°—15' W. T. C. 138° to noon.

The 2nd line is then advanced to noon when a meridian altitude of the sun being 32°—06' bearing south, correction for altitude 0'—59" plus giving the true altitude to be 32°—07' and this worked up for a latitude which gives 36°—10' N. latitude, latitude is line of position, advance 2nd line to noon and gives a longitude of 68°—57' W. with the latitude 36°—20' N. From this position to the destination will be true course 140° and distance 347 miles or 302 knots. The chart is figured in land miles, then transposed to knots to get the latitude and longitude.

The dead reckoning work and the 1st line of position the aviator should do before leaving the ground and then in the air he has only to verify his dead reckoning position by observations and finding the other line of position and advancing them, and to find the error or deviation in his compasses and his wind drift and set.

Instructions in the use of the drift, set and transverse chart: (Huntington drift, set and transverse chart for airplanes in the air at any speed.) Drift is the distance and direction the plane moves by the wind. Set is the distance that the vessel is set ahead or back on the course. (Cont. on page 532)



*That's why
More Pilots fly them!*

THE extensive use of the Ryan Brougham on mail routes on the Pacific Coast has demonstrated it to be a worthy companion of its sister ship "The Spirit of St. Louis".

The remarkable performance of this plane is built upon sound engineering design plus excellent construction—and the installation of Wright Whirlwind Engines. Deeply cushioned chairs, heavily insulated cabins, easy of access with splendid ventilation, together with

excellent vision all combine to provide convenience and comfort for both passenger and pilot that is unusual...The durability, reliability and safety of Wright Whirlwind Engines in private flying is proverbial. Their splendid performance in the many overseas flights and in over 4,635,000 miles of military and commercial flying during 1926 confirms the faith that experienced fliers and aerial commercial operators have in this Superlative Engine.

Send for Bulletin No. 17

WRIGHT AERONAUTICAL CORPORATION, Paterson, N. J., U. S. A.

WRIGHT
Whirlwind
A SUPERLATIVE AERONAUTICAL
engine


Say you saw it in AERO DIGEST

The chart is circular in shape and is used as a compass in determining the compass course to steer from the position of the ship at the center of the chart (A).

From the center of the chart the circles are equal distance marked to 120. More circles can be added if a greater distance per hour is required but the circle on which the degrees are marked must remain the same distance from the center, (11.5 divisions from the center). The degree divisions are the measuring scale on the chart as each circle is 10 knots or miles apart or 5 degrees equals 10 knots or miles on the chart. Each degree equals 2 knots or miles.

To measure the distance: the circle cutting the distance gives the distance from the center of the chart, (A) and the distance from any circle. For example, if the distance comes between 80-90 on any direction, the distance from 80 is measured on the degree circle which will be 4 degrees equals 8, $80+8=88$ knots or miles. (Referred to later in getting the difference in latitude and longitude.)

On the line from center of chart (A) joining 260 degrees is the measuring scale for slow moving vessels and each circle represents 2 knots or miles which can be doubled if the speed is greater than 24 knots, line extending from (A) to 80 degrees, each circle represents 5 knots or miles, 10 degrees equals 10 knots or miles is made, or more circles can be added to the chart.

A vessel in the air, position of ship is in center of chart at (A), speed 100 knots or miles, direction of wind from 30 degrees at

20 knots or miles, the drift will be on the opposite degree 212, measure off 20 knots or miles from center of chart (A) to be on 212 degrees and on true course 320 degrees measure off 100 knots or miles or the distance made in one hour, at (B). Place edge of parallel rules on (B) and (C) and move to center of chart at (A), the edge of the rules will cut 330 degrees, which is the course corrected for drift. The difference in distance between (B) and (C) and the speed per hour will give the amount the ship has been set back being 8.5 knots or miles, the ship has made 91.5 knots or miles instead of 100 knots or miles. If the wind had been on the quarter at the same angle the ship would have been set ahead 8.5 knots or miles making 108.5 knots or miles over the surface of the earth.

The deviation and variation of the compass must be applied as per rule in article 49-53 inclusive in Mariner's Guide. Westerly error carries you to the left, so westerly deviation and variation must be added and easterly error must be subtracted to get the compass course to steer, from the true.

The use of the chart to get the difference of latitude and longitude. Example: True course 320 degrees, distance 100 nautical miles, (it is necessary to work in nautical miles to get the latitude and longitude in). Position at point (A) at center of chart is the position of the ship in latitude $40-42'$ N., longitude $74-00'$ W. Sailed on a true course of 320 degrees, distance 100 knots, which is the point marked (C) vertically under (C) at (E) will give the departure

measured on the east and west line 64 knots from (C) to (F) on north and south line will give

Latitude 76 equals $1-16'$ N.
Latitude left is $40-42'$ N.

Latitude in $41-58'$ N.
Latitude left $40-42'$ N.

$2)82-40$

Mid. latitude $41-20'$ N.

(See article 206-225 inclusive in Mariner's Guide to get the difference of longitude.)

By looking at the chart towards the east and middle latitude 41 degrees to center of chart at (A) and departure 64 knots from (A) towards north at (H) parallel to the east and west line will intersect the angle of middle latitude 41 degrees at (G). The difference from (G) to (A) will be the difference of longitude

86 minutes equaling $1-26'$ W.

Longitude left $74-00'$ W.

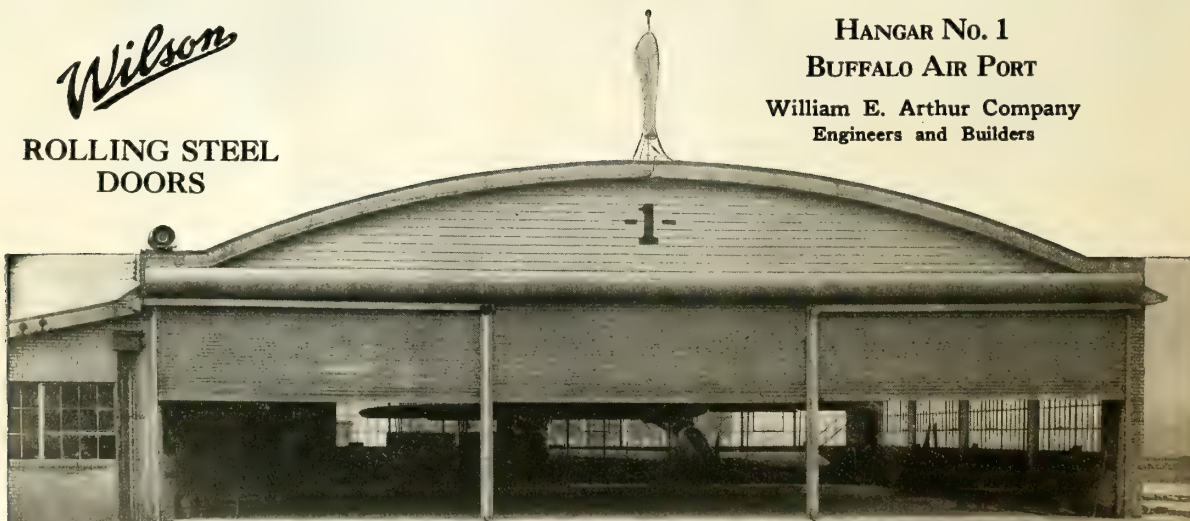
Longitude in $75-26'$ W.

Position by dead reckoning, latitude $41-58'$ N., longitude $75-26'$ W., true course 320 degrees, distance 100 knots.

Vessels navigating in the air should determine their latitude and longitude every hour by dead reckoning and by observation if possible and their compass error, (Articles 72-84 inclusive), and should begin navigating as soon as the vessel leaves the ground the same as a ship at sea. The navigation begins as soon as the ship clears the land and continues until the ship arrives at her destination.

Wilson

ROLLING STEEL
DOORS



HANGAR No. 1
BUFFALO AIR PORT

William E. Arthur Company
Engineers and Builders

Modern Equipment is a Vital Necessity for Hangars

Wilson rolling steel doors multiply-operated by electric motors, economical and foolproof, should be standard on all hangars designed to give maximum service.

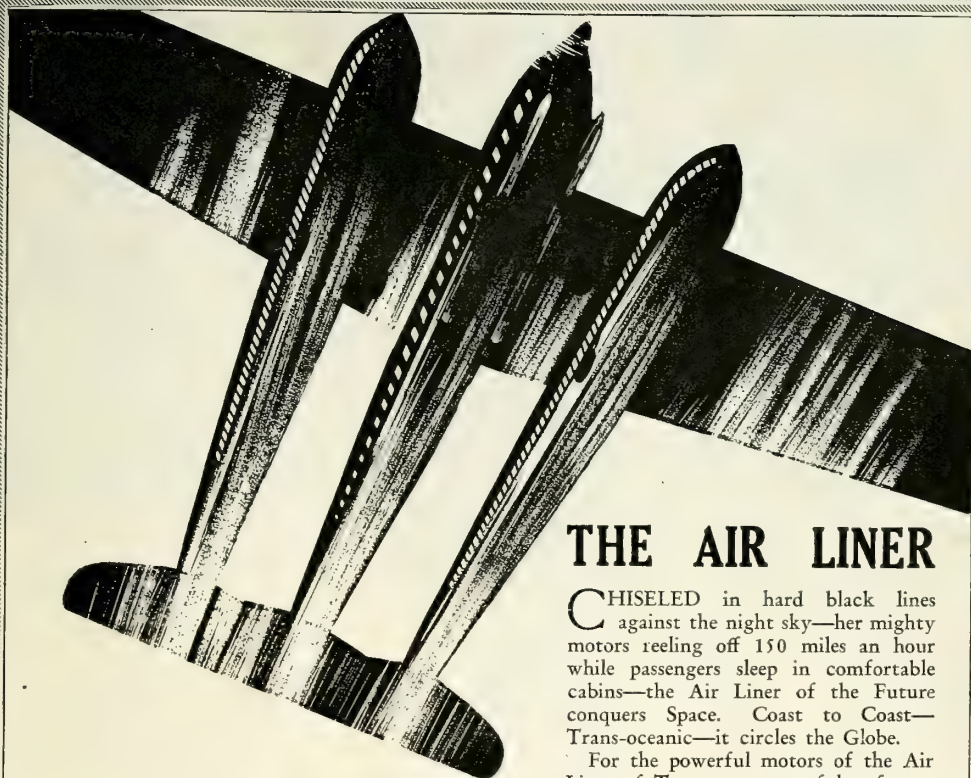
Pressing a button raises or lowers all curtains simultaneously.

Coiling overhead, out of the way, giving unobstructed opening—save time and temp. Ships can always get away on schedule.

Send for details and data before proceeding with your design

THE J. G. WILSON CORPORATION, 11 East 38th Street, New York City

Offices in all principal cities
Factories, Norfolk, Virginia



THE AIR LINER

CHISELED in hard black lines against the night sky—her mighty motors reeling off 150 miles an hour while passengers sleep in comfortable cabins—the Air Liner of the Future conquers Space. Coast to Coast—Trans-oceanic—it circles the Globe.

For the powerful motors of the Air Liner of Tomorrow powerful, safe, reliable fuel is needed. It must be light in weight—and it should have the life and power of a fuel such as NATURALINE.

NATURALINE is a super-aviation fuel perfected by the Chestnut & Smith Corporation—probably the most volatile and most powerful fuel known—for use in modern airplane motors. Forty-six pounds per hundred gallons lighter than U. S. fighting grade gasoline is an obvious advantage—especially in the case of long flights. It is exceedingly high in anti-knock qualities and eliminates “gas-lock” and the formation of carbon.



NATURALINE is making the air safer for Humanity.

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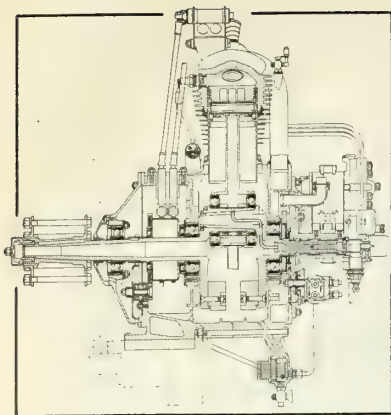
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Responsible pilots desiring to test Naturaline will be supplied by applying to:

Aviation Service Corporation, 12 West 40th Street, New York City



Sectional view of the Ryan-Siemens engine.

tremely hot and extremely cold climates; balance of masses and large number of comparatively small cylinders producing smooth, almost vibrationless operation.

Specifications of the three models of Ryan-Siemens engines are as follows:

	Model 5	Model 7	Model 9
Number of cylinders	Five	Seven	Nine
Bore (inches)	3 15/16	(same)	(same)
Stroke (inches)	4 23/32	(same)	(same)
Displacement (cubic inches)	287.5	402.2	517.5
Revolutions per minute	1750	(same)	(same)
Normal output (h. p.)	70	97	125
Weight, dry, without hub (pounds)	257.8	325.6	381.3
Weight of hub complete (pounds)	6.83	(same)	7.73
Weight per horse-power (pounds)	3.4	3.	2.79
Gasoline consumption, pounds h.p. hour	44-48	(same)	(same)
Gasoline consumption at cruising speed (gals. per hour)	4-5	6-7	7-8
Oil consumption (pounds h. p. hour) .....	.016-.024	(same)	(same)
Oil consumption at cruising speed (gals. per hr.) .....	.14	.19	.23
Maximum diameter (inches)	40 15/32	(same)	(same)
Maximum length (inches)	32 25/64	(same)	(same)
Gross weight packed for shipment (pounds) ..	628	672	716.3
Weight of exhaust manifold with pre-heater (pounds)	12.34	15.42	19.836
Weight of electric starter with battery (pounds) ..	75	(same)	(same)

SPECIFICATIONS OF RYAN - SIEMENS AIRCRAFT ENGINES.

THE UDET "FLAMINGO"

THE Udet U.12, or "Flamingo," is considered to be one of the best German machines for acrobatic flying. It is a single-bay biplane of wooden construction. The centre-section and interplane struts are made up of pressed sheet duralumin.

Specifications

Wing span10 meters
Length over all6.7 meters
Height2.8 meters
Wing area24 square meters
Wing empty500 kilograms
Useful load300 kilograms
Weight loaded800 kilograms
Wing loading

33.4 kilograms per square meter

Power loading10 kilograms per h. p.

Engine97 h. p. Siemens

Speed, maximum ..140 kilometers per hour

Speed, landing60 kilometers per hour
Ceiling3,000 meters

Miss Thea Rasche, the noted German aviatrix, is giving flying exhibitions with one of the Udet Flamingos in various cities in the United States where she has won the admiration of the public for her masterful handling of the plane.

AIR FORCE TESTS OF SPERRY MESSENGER MODEL WITH SIX SETS OF WINGS

By J. M. SHOEMAKER

Synopsis of N. A. C. A. Report No. 269

THE purpose of this test was to compare six well-known airfoils, the R. A. F. 15, U. S. A. 5, U. S. A. 27, U. S. A. 35-B, Clark Y, and Gottingen 387, fitted to the Sperry Messenger model, at full scale Reynolds Number as obtained in the variable density wind tunnel of the National Advisory Committee for Aeronautics; and to determine the scale effect on the model equipped with all the details of the actual airplane. The results show a large decrease in minimum drag coefficient upon increasing the Reynolds Number from about one-twentieth scale to full scale. Maximum lift coefficient was increased with increasing scale for all the airfoils except the Gottingen 387, for which it was slightly decreased. A comparison is made between the results of these tests and those obtained from tests in this tunnel on airfoils alone.

Report No. 269 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

FAIRCHILD SPRAY-DEFLECTING PONTOONS

By HOWARD SNOW

Consultant Engineer, Fairchild Aviation Corporation

FLYING over water in the United States and Canada with seaplanes or flying boats has not developed anything like as rapidly as landplane flying. This is extraordinary in a way, because the United States with its many rivers and lakes and long coast-lines offers unlimited possibilities for this type of flying. General de Pinedo in planning his world tour chose a seaplane, yet many a long stretch of land lay across his way. Many think that a seaplane has the advantage, for it need not depend upon prearranged landing space but can utilize existing facilities, and nearly every city of note is near some waterway. Floats of interesting design and construction have recently been put into production by the Metal Boat Division of the Fairchild Airplane Manufacturing Corporation of Farmingdale, Long Island. These pontoons are unusual both in their performance and operation and in their commercial possibilities. Many over-water routes such as along our coasts, rivers and chains of lakes, could be efficiently operated with seaplanes, and it is the hope of the Fairchild Corporation that its new floats will prove a means of stimulating this sort of traffic.

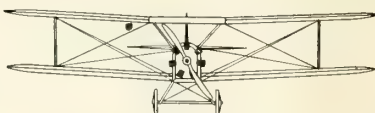
Investigation Before Production

Before placing the pontoons in production, a most extensive investigation of float construction and requirements was conducted. Sherman M. Fairchild visited the various metal boat and float manufacturers of Europe, and in this country the Aeromarine riveted all metal flying boat was purchased and tested under actual operating conditions. As chief engineer, a man of twelve years' experience in seaplane design and manufacture was obtained. A. R. Stalb is also a Naval Architect and for several years was under Commander Richardson, U. S. N., in model basin, wind tunnel and development work on floats. Many experiments of various sorts have been conducted under his direction and additional operating data obtained from the records and observations of the Fairchild Aviation Limited of Canada, covering its years of seaplane operation. Thus, the program was arranged to meet certain definite requirements found to be essential in operation; design, materials, and detail construction were planned with the determination to meet these requirements.

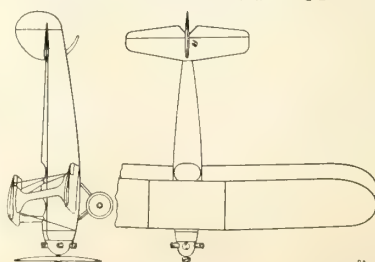
Spray Deflecting

First of the achievements of this new pontoon is its ability to throw spray horizontally—an all important feature—for with conventional twin pontoons of the straight "V" bottom form, the two streams of spray meet in the middle and are thrown upward into the propeller and against the fuselage and tails. With the Fairchild floats, however, the "V" bottoms are not straight-sided but are of a special parabolic concave curvature from whose chines the spray is thrown horizontally and quickly dissipated.

In practice, other advantages of no less



UDET TYPE U12 FLAMINGO



The Udet Flamingo, a German plane designed for stunting, is powered with a Model 7 Siemens engine.

WINTER KING

FLYING SUITS

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ALL SIZES
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interlined
with warm
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fly flap

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tear are bar-
tacked.

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to put on
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shearling
fur collar
5" high

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non-creeping
hookless
fasteners

Two large
breast
pockets

Adjustable
wrist
straps

Two
convenient
knee pockets
and also two
hip pockets

Hookless
fasteners
at leg
bottoms

FLYING SUITS

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WARM
ELEGANT
PRACTICAL

NONE BETTER

PROTECTOR GOGGLES



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The VOUGHT FU FIGHTER

By

George F. McLaughlin

A RECENT development in the U. S. Naval Air Service is the adoption of the Vought Training-Fighter Model FU-1 which is to be used for the training of pursuit pilots. Twenty of these planes have already been delivered and put into service in that work.

There are several interesting features in the construction and performance of this model, produced by the Chance Vought Corporation, Long Island City, New York, in coöperation with the Bureau of Aeronautics, Navy Department.

It is of the convertible type, and may be equipped interchangeably with standard wheel-type landing gear, or float type landing gear consisting of large central float, and two smaller wing tip floats.

The Vought FU is the first production type airplane in which a supercharger has been used in connection with an air-cooled motor. The supercharger is of the Root's blower type developed by the Navy Department and manufactured by the Allison Engineering Company. The blower is connected to the Wright J-5 motor through a gear train which builds up the proper rotary speed in the blower, and valves are located in the duct from the supercharger to the carburetor for pressure control. By the use of these valves, atmospheric or various amounts of pressure built up by the supercharger, may be fed to the carburetor. These conditions are controlled direct from the cockpit by the pilot, and supercharger pressure is indicated at all times by a gauge on the instrument board.

An ingenious control device has been developed for the control of supercharger and motor, so arranged that under no conditions can the power plant be damaged by the improper use of the supercharger. This device undoubtedly will prove of great value in the control of all supercharged motor installations, toward which there is an undeniable trend at the present time.



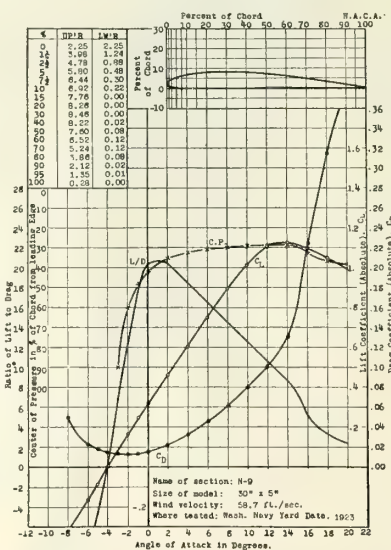
An electric starter is used in connection with the standard inertia starter, it being possible to start the motor by either method. This arrangement is clearly shown in the accompanying illustration showing the mo-

these guns are controlled directly through the instrument board in the cockpit, and ample hand room has been provided to reach the guns for clearing up jams, etc.

The FU-1 Fighter is designed to carry a load of fragmentation bombs attached to special racks on the wings and the fuselage structure is reinforced for launching from Navy type catapults.

The fuel tanks are faired into the sides of the fuselage resulting in close coupling of the weights, minimum fire hazard and generally efficient installation.

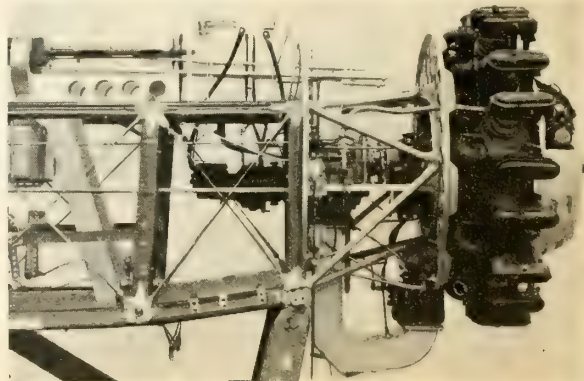
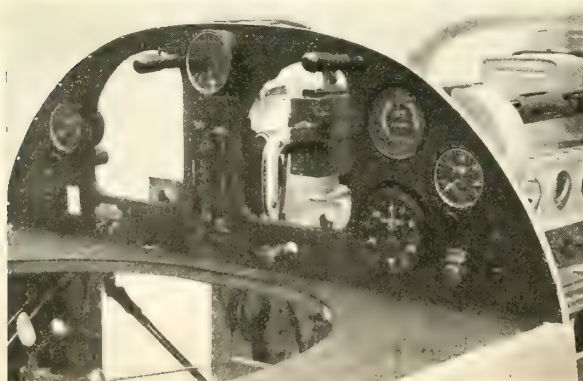
The wing section is the Navy N-9, which is a comparatively thick, high lift wing, and these planes have the usual ample control surfaces provided on all Voughts, making the ship easy to fly and providing excellent maneuverability. The careful design and arrangement, and the efficient supercharged motor installation, give this new Vought a very interesting performance. While official figures are not available, it is understood that the sea-level speed of this model is about 130 miles per hour, while at an altitude of 20,000 feet its speed is 150 miles or twenty miles greater than at sea-level. The service ceiling also is said to be over 28,000 feet. These and other demonstrated performances give this the highest performance of any general service airplane in the world at altitudes above 20,000 feet, and it is at such high altitudes that the real fighting will undoubtedly be done in future wars.



Characteristics and ordinates of the Navy N-9 wing section used on the FU-1.

tor, supercharger, inertia starter, and electric starter.

The armament of the Vought FU consists of two machine guns with synchronizers, firing through the propeller. Both of



On the left is shown the instrument board and an efficient gun and ammunition box support; on the right is the power plant installation showing the arrangement of the Root's type supercharger and Eclipse combination hand and electric inertia starter.

All STEEL waiting stations — FIRE-RESISTANT!

The National Air Transport Company is using many Butler *Ready-Made* Steel Buildings as waiting stations on their passenger lines.

Like Butler Hangars these waiting stations are non-combustible because they are made entirely of steel. The doors, sash, all wall and roof sheets are 24 gage, tight-coated galvanized steel.



One of many waiting stations (8' x 14' with 8' x 14' canopy) used by National Air Transport Company.

HANGARS

*made by Butler are
FIRE-RESISTANT!*

Butler Hangars are non-combustible because they are made entirely of steel. Doors, sash, roof, wall—all are steel, the wall and roof sheets being 24 gage tight coated galvanized steel with deeply drawn paneled corrugations.

Good lighting arrangement, easily operated doors—these are a few more advantages of Butler Hangars. Mason City recently finished erecting one and *thanked* us for our speedy service. Write today for interesting circular and prices.

All wall and roof sheets have deeply drawn paneled corrugations for extra strength and stiffness.

All sheets are bolted together and to the steel frame by means of galvanized bolts. This bolted construction makes a more rigid and satisfactory building than other types of construction. It makes the building permanent as long as you desire it, yet allows practically 100 per cent salvage.

Butler *Ready-Made* Steel Waiting Stations, like Butler Hangars, come to you complete, ready to erect. They may be economically enlarged at any time. If desired they may be taken down, moved and re-erected with practically 100 per cent salvage.

Send for Interesting Prices

Quotations are made f.o.b. plant or erected. Please specify size of the station desired, the number of buildings and how many windows. Then prices quoted will be complete. Full details sent on request. Write today.



Butler Manufacturing Company
Kansas City, Mo. Minneapolis, Minn.

New York Office: Room 701, 44 Whitehall St.

Say you saw it in AERO DIGEST

THE KEYSTONE 'PATHFINDER' AND 'PRONTO'

THE first plane of the "Pathfinder" type built by the Keystone Aircraft Co., Bristol, Pa., is to be used by the West Indian Aerial Express of Santo Domingo. An aerial passenger, mail and express service was inaugurated last month between Santiago de Cuba, Port au Prince, Haiti, Santo Domingo City and San Juan, Porto Rico.

The cabin of the "Pathfinder" transport is beautifully finished in gray velour and dark blue leather. Ten passengers are comfortably seated in sturdy wicker chairs and two extra people can be seated on stools when occasion requires.

Ten sliding glass windows provide excellent light, vision and ventilation. Two large entrance doors are provided, one on each side of the fuselage at rear of cabin. During flight the steps are pulled inside, out of the wind.

Back of the cabin is the compartment for mail or baggage and in this room a toilet has been provided. Forward of the cabin a sliding door gives access to the pilot's cockpit. This cockpit is roomy and provided with dual controls. It is enclosed by windshields and a cab roof giving complete protection to the pilot against rain or hail, and yet an unobstructed vision is obtained.

The pilot's seat is adjustable vertically and both rudder pedals are adjustable fore and aft. The pilot and crew have ample exit through a sliding panel in the roof of their cab.

The fuselage structure is all composed of chrome molybdenum tubing, welded in a Warren truss, which requires no wire cross bracing.

Wing spars are veneer boxes of an efficient type, and the ribs are a deep stiff Warren truss of wood.

Gasoline is fed by gravity from tanks in upper center section.

Sound-proof Balsam Wool insulating material is placed around the main cabin for the comfort of the passengers.

Brakes are provided on the wheels. They enable the pilot to land in small fields, and

turn quickly. The oleo shock absorber provides a smooth landing with no rebound.

The adjustable stabilizer permits the pilot to balance the ship no matter what load is being carried.

Specifications—Keystone "Pathfinder"

Length over all44 feet 4 inches
Span, upper and lower wing. .66 feet 6 inches
Upper and lower chord, (tapered)

10 ft. 6 in. to 7 ft. 0 in.

Total wing area1,150 square feet

Wing sectionU. S. A. 45 modified

Power plant, 3 Whirlwind engines

220 h.p. each

Weight empty6,356 pounds

Crew (two)360 pounds

Passengers (ten)1,800 pounds

Mail300 pounds

Total2,460 pounds

300 gallon gasoline.....1,800 pounds

30 gallons oil.....225 pounds

Total fuel and oil.....2,025 pounds

Total useful load.....4,485 pounds

High speed112 miles per hour

Low speed57 miles per hour

Initial rate of climb.....570 feet per minute

Range500 miles

The Keystone "Pronto"

The isolation of the great unexplored spaces of South America is to be broken for the first time by the use of regularly operated airlines. Six planes, of the type known as the Keystone "Pronto" have been ordered by the Peruvian Navy through Captain H. B. Grow, Director of Naval Aviation of Peru. The first of these plans have been shipped to South America. Four of the six planes ordered have been fitted with pontoons and will be used as seaplanes, while the other two ships will be equipped with wheels and used for flying over land.

Regular aerial communication will be established between the town of Iquitos, a city with a population of about 15,000 persons which is located on the extreme eastern border of Peru in the interior of South America, and Lima, the capital of Peru. According to Captain Grow, it is only pos-

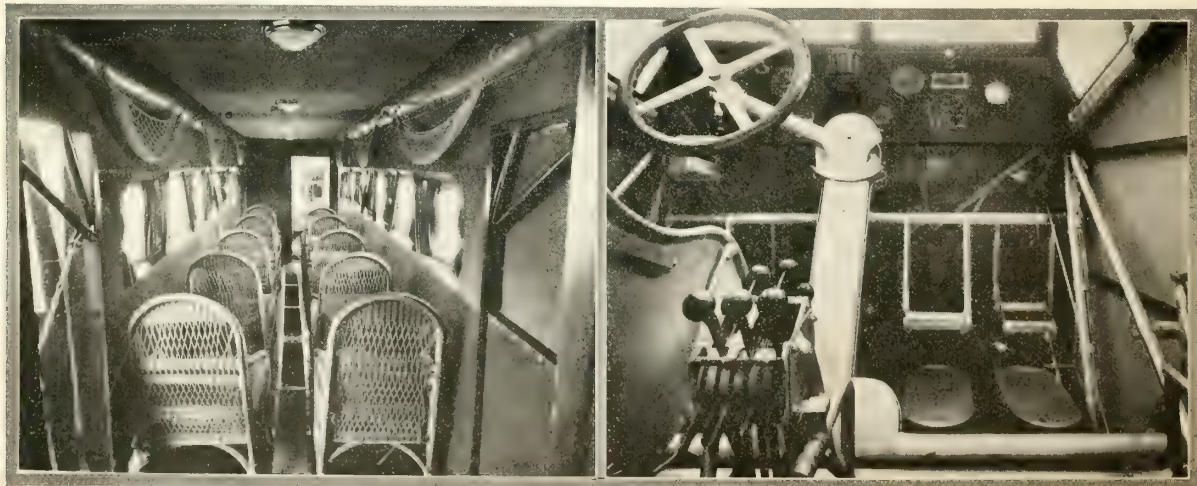
sible for the foreign visitors in Iquitos to live for about eighteen months due to the extreme tropical climate in this locality. After 1½ years it is absolutely necessary for these visitors to seek a climatic change.

Under present conditions travel to Iquitos consumes forty-one days from New York and the entrance is effected via Para, Brazil, and up the Amazon River a distance of about 2,300 miles from the mouth. While the distance between Iquitos and Lima, Peru, on the West Coast is only about 800 miles, this trip may only be undertaken by the most hardy pioneers, due to the fact that it takes from 21 to 28 days and the traveler is subjected to dangers and hardships.

In order to reach the West Coast by present methods, one must leave Iquitos by launch on the Ucayale River, a branch of the Amazon, and continue for ten days upstream. The boat affords only the most meager accommodations and the food must be secured from the tribes of Amazonian Indians encountered along the shores. Continuing up the Ucayale River to Puerto Bermudez, passengers must transship to Indian dugout canoes and a number of days travel must be spent in navigating the treacherous waters of a tributary of the Ucayale to Tarma, Peru. From this point ten days must be spent on muleback, crossing the Andes Mountains and going up to altitude of from 10,000 to 15,000 feet.

As a direct change from the hot tropical climate of the river, the travelers must be able to resist the extreme cold mountain air. After leaving the mule caravan, they ride by automobile for one day to the terminus of the Peruvian Railroad where another day is consumed in the railroad trip to Lima, Peru.

The plane which will be put into action early this fall by Captain H. B. Grow, will be to establish the aerial communication between Iquitos and Lima, Peru, which will consume altogether only 2½ days. A seaplane will leave Iquitos, flying up the Ucayale River, and will carry two passengers and pilot as well as 400 pounds of mail and express matter. Flying at an average speed



Interior views of the Keystone "Pathfinder," showing passengers' seating arrangement, the pilot's controls and instruments.



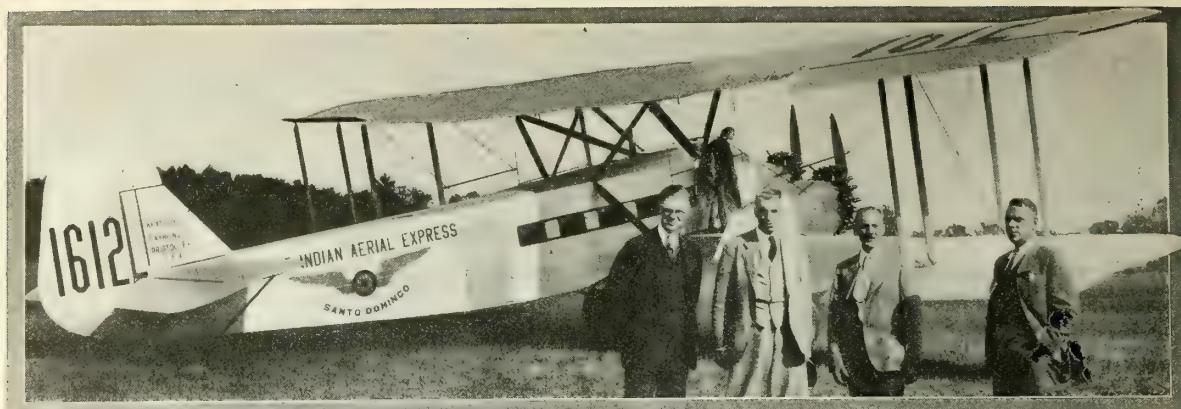
THE KEYSTONE JOINS NORTH AND SOUTH A M E R I C A

As transportation barriers in Central and South America are overcome the major development of these nations will increase by leaps and bounds. Impregnable forests, high mountain ranges and tropical climate have for centuries held surface-traveling man in check. However, there are few inaccessible places in Central and South America to the airplane.

The Keystone "Pathfinder" has been chosen for extensive commercial use by the West Indian Aerial Express to operate between Santo Domingo and Cuba. A number of single engine "Pronto" type Keystone planes are now used in Peru where land travel and service are both slow and hazardous. Keystone aircraft are built to meet all military and civil requirements.

KEYSTONE AIRCRAFT CORP.
BRISTOL, PENNSYLVANIA





The new Keystone "Pathfinder." Left to right—Edgar N. Gott, C. T. Porter, Elliott Daland and C. L. Roloson.

of 90 miles an hour, the Keystone "Pronto" will arrive at Puerta, Bermudez, in 8 hours or one day. This trip at the present time takes ten days by river launch.

Passengers and express matter will be trans-shipped at Puerto, Bermudez, to the Keystone landplane and will fly over the high passes of the Andes Mountains, at altitude ranging from 14,000 to 16,000 feet, landing at San Ramon, Peru, on a flying field which is 10,000 feet above sea level. From San Ramon the travelers are driven to the Peruvian Railroad terminus and within twenty-four hours are delivered safely in the capital. During the entire trip the passengers are free from pestilence and scourge, which almost invariably overtake the ground traveler on the journey.

The Keystone Peruvian "Pronto" will demonstrate for the first time in the history of commercial aeronautics the practical application of the supercharger for regular aerial transportation work where altitude flying such as crossing the Andes Mountains is necessary. In ground tests the Root supercharger has increased the horsepower developed by the Wright Whirlwind motor from 225 to practically 300 h. p.

Specifications—Keystone "Pronto"

Length 26 feet 9 inches
Span both wings 38 feet 11 inches
Wing area 365 square feet
Weight empty, land plane 1,975 pounds
Weight empty, seaplane 2,375 pounds
Useful load 1,310 pounds
Gross weight, land plane 3,285 pounds
Gross weight, seaplane 3,685 pounds
Baggage and mail capacity 400 pounds
Power plant

Wright J-5 engine, 220 h.p. at 1,800 r.p.m.

Actual Flight Data (without supercharger)

Land Plane Loaded to 2,450 Pounds:

High speed 118 miles per hour
Time of climb to 10,000 feet 12 minutes
Time of climb to 20,000 feet 41½ minutes
Rate of climb at sea level 650 feet per minute
Rate of climb at 10,000 feet

500 feet per minute

Rate of climb at 18,000 feet

300 feet per minute

Land Plane Loaded to 3,204 Pounds:

High speed 112 miles per hour
Take-off speed 37 miles per hour
Time of take-off in 500 foot run... 10 seconds

Time of climb to 10,000 feet

16 minutes 25 seconds

Time of climb to 14,200 feet

40 minutes 10 seconds

Rate of climb at sea level 600 feet per minute

Rate of climb at 10,000 feet

300 feet per minute

Seaplane Loaded to 2,748 Pounds:

High speed 112 miles per hour

Time of climb to 17,000 feet 51 minutes

Seaplane Loaded to 3,504 Pounds:

High speed 106 miles per hour

Take-off speed 44 miles per hour

Landing speed 40 miles per hour

Time of climb to 10,400 feet 40 minutes

NEW AIRWAYS BEACON

THE General Electric Company is furnishing to the Department of Commerce for the Chicago-St. Paul and the New York-Atlanta airways a new design of 24-inch rotating beacon of 2,000,000 candlepower which shows many improvements over previous designs.

The beacons formerly used on the airways had the rotating mechanisms and electrical parts contained in the base casting and servicing the rotating mechanism on account of its inaccessibility. This has now been changed so that all of the parts are readily accessible by removing a sheet metal cover attached to the bottom of the base

casting. This casting is supported on four pipe legs.

The motor, which rotates the drum is hung from the base. The worm on the shaft engages a large worm gear to give the correct reduction in speed. A slip clutch is provided so that the beacon may be rotated by hand, also protecting the gearing from damage by accidental droppage.

An automatic lamp changer which operates on the electro-magnetic principle acts, upon failure of the incandescent lamp, to put in place a spare lamp.

On the later airways established by the Department of Commerce all the beacon towers are also equipped with on-course lights which flash distinctive characteristics along the route. The flashing mechanisms for the on-course lights are attached to the center rotating shaft of the beacon and therefore the flashes of the on-course lights are in synchronism with the beacon's rotation.

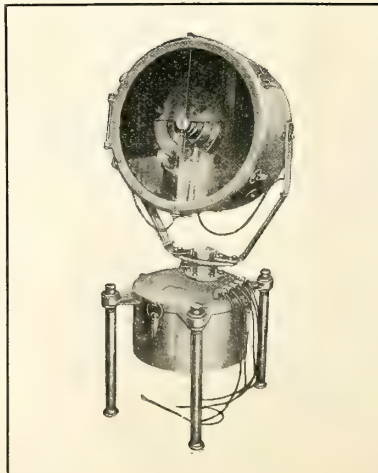
The plate glass door of the beacon is in three sections of the same size and held in the front door frame by a removable packing ring.

HASKELITE ON PLANES IN NAT'L AIR RACES

AT the National Air Races held in Spokane, Washington, in September, Haskellite again maintained the high average of use in prize-winning planes demonstrated last year at Philadelphia, in the Ford Reliability Air Tour in July, in Lindbergh's and other record-breaking flights.

In the Air Derby races from New York to Spokane and from San Francisco to Spokane, fourteen of the seventeen planes which received prize money had parts made of Haskellite and every first prize winner was a Haskellite-built plane.

Thirty-nine of the forty-five prize winners in the twelve National Air Races held at Spokane were planes having important parts of this product. All of the first-prize winners in the speed races were Haskellite-equipped, and in nine of the twelve events planes built with this blood-glue plywood made a clean sweep of the prize money. The percentage of prize winners in these races and derbies is between 85% and 86%.



24-inch G. E. revolving airport beacon.



Reg. applied for

LEADERS in government and commercial Aircraft production use "DARTMOUTH-TEX" FABRIC AND TAPES

80% of the planes now in use and in process of manufacture are fabricated with the super fabric DARTMOUTH-TEX.

WHY? Because every precaution was taken thru long years of research to produce the finest and strongest cloth for safety and strength. DARTMOUTH-TEX far surpasses the rigid U. S. Government Specifications. It is readily applied to wings, fuselage and tail surfaces, eliminating all inconvenience of manufacture.

Why let inferior fabrics *slow up* your production?

AMONG the Manufacturers NOW Using "DARTMOUTH-TEX"

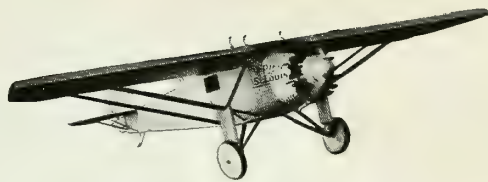
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Boeing Airplane Company
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Chance Vought Corporation
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Keystone Aircraft Company
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Travel Air Manufacturing Co., Inc.
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Stinson Aircraft Corporation
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Training gets men ahead in Aviation



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First trans-Atlantic pilot—
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tute of U. S. A.

At home, in your spare time, you can learn the fundamentals of Aviation—and start yourself on the way to large earnings

THE recent growth of Aviation is significant. It indicates the kind of expansion that means solidity and permanence—real *commercial* expansion. Mail, express and passenger lines are operating;

great factories are building planes by hundreds for pleasure, business and air transportation.

The industry is growing so fast that there is a positive hunger for trained men in all its branches. *But without training, no man is wanted.*

Aviation Institute can give you needed training—all the necessary knowledge. It is easily acquired in spare time, at home. All you need is a desire to learn.

Lieut. Walter Hinton and his staff of experts will guide your instruction from beginning to end. There are many positions open as mail pilots, commercial flyers, instructors, plenty of well paid jobs as inspectors, riggers and mechanics on the field, and any amount of openings in the different factories. But aircraft manufacturers must have trained men. There must be no mistake in the construction or operation of a plane.

On a flying field, men without proper training endanger themselves besides hindering flight instructions and other practical flying work. Aviation is developing too fast to train men by experience.

The Aviation Institute course teaches you everything you need to know, right up to the point of actual flight instruction on the flying field and in the air. All the preliminary work is overcome in a few pleasant hours at home. When you have graduated from the Institute, and received your diploma, you are ready for the sky. Five to ten hours with an instructor and you can fly *alone*.

In cooperation with the Institute, final flying instructions are given in all parts of the United States at reasonable rates. *One flight to each graduate.*

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Who will be next?

Lindbergh, Chamberlin, Byrd, Noville, Acosta and Balchen, Hegenberger and Maitland—new names on the pages of fame! Whose name next week or next year?

Training and careful preparation, combined with grit and courage made possible their remarkable record flights. Who will follow to fame and fortune?

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Tells
All



Aviation Institute of U. S. A., Suite 611
1115 Connecticut Avenue, N. W.
Washington, D. C.

You may send me without obligation a free copy of "Rich Rewards in Aviation."

Name.....

Age (Not under 16).....

Street.....

City..... State.....

AVIATION INSTITUTE OF U. S. A.



Walter Hinton, President

1115 Connecticut Ave., N. W., Washington, D. C.

Suite 611

Furthermore, due to the wide spacing of the cabane struts, interference with the forward vision of the pilot is reduced to a minimum.

The tail group is constructed throughout of welded steel tubing with 5/16 inch by .035 inch tubes serving as ribs, and is fabric covered. The stabilizer is adjustable in flight from the pilot's cockpit.

The undercarriage is of the split-axle type using streamline heat treated chrome-molybdenum tubing, and Aerol strut shock absorbers. The tread is very wide, being as much as 76 inches and the equipment of brakes of the Sauzedde type to the wheels not only enables very short runs on landing, but also permits of complete control of direction on the part of the pilot during taxiing.

With a view to rendering engine change a rapid and readily accomplished operation, the power plant unit, including the five-gallon oil tank, is mounted on a quickly detachable mount with all fuel and oil lines arranged for quick disconnection. The 60-gallon gasoline tank is suspended immediately back of the engine, in the fuselage, in a position such that adequate gravity feed is possible. This fact is of more than passing interest, since, in spite of the fuel tank being mounted in the fuselage where all weights are centralized, the fuel is by gravity, a system seldom possible except with wing tanks.

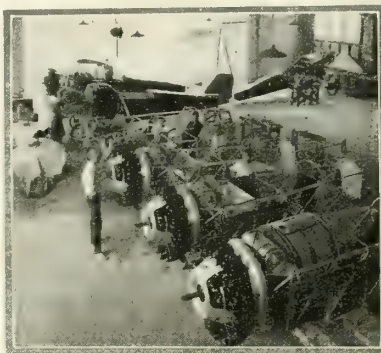
As a safeguard against fire in the air, a pressure Pyrene fire extinguisher is installed with special nozzles distributed back of the engine so as to cover all vital parts. The operation of this precautionary system



The Pitcairn Mailwing equipped with a Wright Whirlwind J5 engine.

is controlled from the pilot's cockpit.

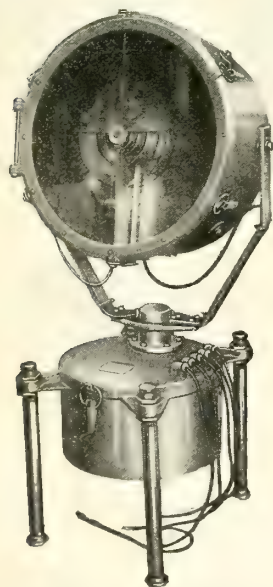
The Pitcairn Mailwing is also constructed as a passenger plane, an open cockpit for two passengers being provided in place of the regular mail compartment.



Pitcairn Mailwings in production.

Specifications and Performance

Weight empty	1612 pounds
Weight empty, including batteries, landing lights, and parachute flares, etc.	1742 pounds
Total weight	2512 pounds
Wing area	252 square feet
Overall span, upper	33 feet
Overall span, lower	30 feet
Chord, upper	54 inches
Chord, lower	48 inches
Mean aspect ratio	7.42
Dihedral, upper wing	1 degree
Gap at fuselage	62 inches
Stagger	22 inches
Area of ailerons	21.0 square feet
Area of stabilizer	15.5 square feet
Area of elevators	14.5 square feet
Area of fin	4.2 square feet
Area of rudder	6.4 square feet
High speed	136 miles per hour
Minimum speed	45 miles per hour



This beacon is now furnished as standard for the airways maintained by the Department of Commerce

When you Light your Airport

the first piece of equipment should be a G-E 24-inch beacon. A majority of the beacons already installed by the Government on American airways are of General Electric manufacture.

Ask the aviation lighting specialist at the nearest G-E sales office for complete information covering the superior construction and operation of this beacon.

Lighting Equipment for Airports and Airways

Airport Floodlights
Beacons
Boundary Lights
Control Equipment
Transformers
Wire and Cable



711-16

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN PRINCIPAL CITIES

A Showroom for Your Products at the Crossroads of New York...

Window Displays...

where they bring the most results—44th Street and Fifth Avenue—where bankers, business men, and transient buyers turn toward the hotels and the Grand Central Terminal. 90 square feet ready for reservation.

Advertising...

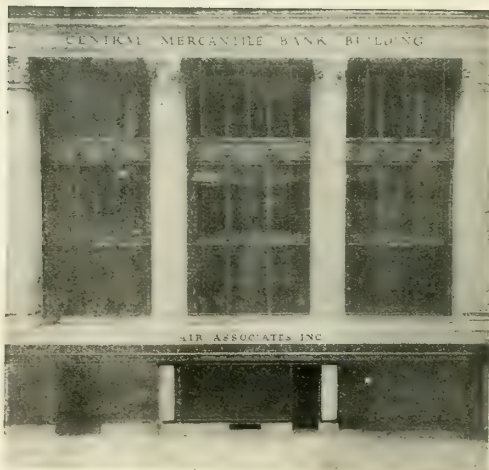
that is first hand, unexploited and backed up by authentic information and sales energy. Floor space for your exhibits and two lobby windows in the 33-story Central Mercantile Bank Building.

Sales...

from a map to a monoplane. From a ground school course to a nation-wide air tour. In giving public service, we find cash buyers and consistent users at your commission terms.

Information...

as the air-minded layman wants it—prompt, thorough, authorized. Send us your literature, catalogs, specifications. Commercial aviation means: *With the Industry for the Public.* We are a clearing house.



A 4-Banks Corner
A Fifth Avenue Building
An Aviation Showroom

AN OPEN LETTER

to the Personnel of the Industry

November 1, 1927.

Gentlemen:

To those who look back a year with us to the first efforts of the "Air Age Associates"—to the few who encouraged our aims and welcomed our incorporation—to the many who responded to our letters about "a street level service bureau"—this advertisement carries both thanks and a promise. We have created a valuable task. If we succeed in it—you will share our success.

Cordially,

AIR ASSOCIATES, Inc.
535 Fifth Avenue New York City

Say you saw it in AERO DIGEST



A group of new Lincoln Page 3-place commercial planes powered with 90 h.p. OX5 engines.

LINCOLN PAGE PLANE

THE new Lincoln Page 3-place plane, built by the Lincoln Aircraft Company of Lincoln, Nebraska, has an all steel constructed fuselage, split type landing gear, adjustable stabilizer and is of very rugged construction. It has four ailerons making it very easy of control, an extra good climb and wide speed range. The engine cowlings are removable. The fuel capacity is forty-two gallons. The standard models are equipped with new 90 h.p. OX5 motors, but the ship is so well built that it will handle any motor from OX5, Hispano or Wright Whirlwind, any of which may be mounted by changing the motor mounting and without strengthening the ship in any way.

The wings are of unit type construction with no center section which relieves tension and compression strains on the fuselage. The struts are "N" type made of streamline tubing.

At the present time, the factory is in production of two of these planes a week and hopes to increase this number in a short time to one a day.

Specifications

Area of upper wing, including aileron,	156 square feet
Area of lower wing, including aileron,	144 square feet
Total supporting area.....	300 square feet
Area of stabilizer.....	17.5 square feet
Area of elevator.....	18 square feet
Area of rudder.....	8.5 square feet
Area of fin.....	3.2 square feet
Span of upper wing.....	32 feet
Span of lower wings.....	32 feet
Chord of upper wings.....	58 inches
Chord of lower wings.....	58 inches
Gap.....	60 inches
Stagger (29 per cent positive).....	16 degrees
Angle of incidence lower.....	1½ degrees
Angle of incidence upper.....	1 degree
Dihedral angle upper.....	0 degrees
Dihedral angle lower.....	2 degrees
Overall length of fuselage.....	23 feet 10 inches
Gasoline capacity.....	42 gallons
Range.....	500 miles
Motor.....Curtiss OX5 90 h.p. at 1,400 r.p.m.	
Speed, at sea level.....	100 m.p.h
Climb, at sea level,	600 feet per minute first 10 minutes
Weight loaded.....	2,200 pounds
Weight empty.....	1,200 pounds
Useful load.....	1,000 pounds
Pay load.....	450 pounds
Landing speed.....	35 miles
Ceiling.....	12,000 feet

THE BOEING 3-ENGINED, TWELVE PASSENGER COMMERCIAL PLANE

THREE de luxe 12-passenger air mail and express planes are now under construction at the Boeing airplane factory at Seattle. They will be completed early next summer and will be placed on the San Francisco-Chicago transcontinental air mail route by Boeing Air Transport, Inc. When the service is first inaugurated, two ships will leave San Francisco and Chicago simultaneously once a week and be increased gradually to daily schedules as the service is demanded.

The new ships will carry mail and express as well as passengers on their sailing days, and the smaller Boeing planes which are now in use will remain in the hangars on those days. The smaller planes have a carrying capacity of about 1,600 pounds, including two passengers. Mail and express poundage is steadily increasing and passenger bookings are always several weeks ahead so that the large planes will be a necessity by the time they are completed.

The new Boeing plane, Design 80, is a commercial airplane, powered with three Pratt and Whitney "Wasp" engines, designed to accommodate comfortably twelve passengers, and at the same time provide space for carrying 1,500 pounds of mail, express or baggage. The total normal pay load is taken as 3,700 pounds.

The passengers' cabin is 73½ inches high, 63½ inches wide and approximately 14 feet long. Well upholstered seats, with reclining backs, are provided, there being one row of single seats on the left hand side of the cabin and a row of double seats with individual reclining backs on the other side. Large windows of safety glass, which are unobstructed by any part of the airplane structure, and which can be either partially or completely opened, are placed opposite each seat in the most convenient position for the passenger's vision. Forced ventilation and heating for the cabin is provided. The cabin is sound-proofed throughout. A convenient and comfortable wash room is provided just aft of the main cabin.

Two baggage compartments are provided; one forward of the main cabin, with a capacity of 60 cubic feet, and one of equal capacity, just aft of the wash room.

340 gallons of fuel, in two tanks carried in the wings, permit of six hours' cruising at 100 miles per hour.

In case of engine pump failure, the gasoline feeds all three engines by gravity in

level flight. (The nose engine will not feed by gravity in a climb, although the two wing engines will).

Oil for each engine is carried in tanks in the respective engine sections. All engines are equipped with electric inertia starters, and a hand crank is provided in the event of failure of an electrical unit. All engines may be started from the pilot's cockpit. Adequate temperature control for each engine is provided. Controls are operated from pilot's cockpit. The wing engine mounts are removable and may be replaced by other units.

Single flight controls are provided, with a seat beside the pilot for a mechanic. The windshields are arranged so that either a closed or open cockpit is provided. Communication with the passengers' cabin is had by means of an aisle past the front baggage compartment.

Provision is made for complete night flying equipment, including two parachute flares.

General Characteristics

Total weight, including 3,700 pounds per pay load.....	13,770 pounds
Wing area.....	1,220 square feet
Span, upper wing.....	80 feet
Span, lower wing.....	65 feet 8 inches
Length, overall.....	56 feet
Height, with front propeller turning,	14 feet 8 inches
Height, with all propellers horizontal,	12 feet 8 inches
Chord, upper wing.....	10 feet
Chord, lower wing.....	7 feet
Propellers, Standard Steel adjustable dural blades, diameter.....	10 feet
Wing loading, full load,	11.3 pounds per square foot
Power loading, full load.....	10.8 pounds per h.p.
Normal pay load per h.p.....	2.9

Performance with Full Load—Three Engines

High speed at sea level.....	128 m.p.h.
High speed at 10,000 feet.....	118 m.p.h
Landing speed, at sea level.....	53 m.p.h.
Climb to 5,000 feet.....	10 minutes
Climb to 10,000 feet.....	17 minutes
Rate of climb at ground.....	980 feet per minute
Climbing speed at ground.....	84 m.p.h.
Service ceiling.....	14,400 feet
Speed at sea level, all engines throttled to 1,700.....	120 m.p.h.
Speed at sea level, all engines throttled to 1,500.....	100 m.p.h.

Performance with Full Load—Two Engines

High speed at ground.....	107 m.p.h.
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NICHOLAS BEAZLEY AIRPLANE CO., INC.



MARSHALL, MISSOURI, U. S. A.

Winter Flying

Is a Pleasure With Warm Clothing



N.B. ARMY-NAVY

WE carry the largest stock of winter flying clothing in America. We absolutely guarantee our winter flying suits in respect to materials and workmanship. We contract for hundreds of suits with foremost manufacturers and because of the tremendous volume of our business we give you the biggest dollar's worth in America. Order direct from this advertisement. We ship the same day.

FLYING SUITS

N.B. Army-Navy Type

No. 1. A suit with outer covering made entirely of a heavy grade of South American Electrified Lambskin with collar lined with South American Beaver (Nutria). We consider this to be the highest grade flying suit made in America, regardless of price. It is made by manufacturers under contract, furnishing flying suits to the U. S. Air Services. All sizes, 36 to 48..... **\$140**

No. 2. Same as above except lined throughout with heavy Sheepskin wool. All sizes, 36 to 48..... **\$125**

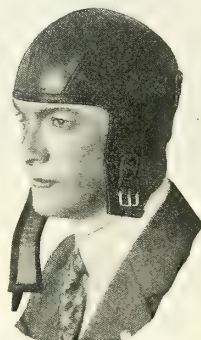
N.B. Commercial Type

No. 1. A suit with outer covering made entirely of a heavy grade of Olive Drab Drill (9 ounce weight) water-proofed by a product called Vivatex and lined throughout with the best grade of heavy Sheepskin wool. Collar lined with South American Lamb Fur. All sizes, 36 to 48..... **\$60**

No. 2. Same as above except lined throughout with fur, with Beaver Lamb fur collar. All sizes, 36 to 48..... **\$80**

Other Suits

We also have a miscellaneous stock of new hand-tailored heavy waterproof gaberdine winter flying suits lined completely with heavy cotton felt material, full inside lining. Large pockets. Heavy 5-inch fur collar. All sizes from 36 to 48..... **\$28**



N.B. NAVY



N.B. ARMY



N.B. COMMERCIAL

HELMETS

N. B. Navy Type

No. 1. Dark Chocolate leather, lined with Beaverized wool and chamois skin. Extra heavy winter weight. There is no finer helmet in America. All sizes.... **\$12**

No. 2. Same as above except lined with Electrified Lamb fur. All sizes..... **\$10.**

No. 4. Chocolate leather, lined with chamois skin. Medium weight. Fitted with powder puff ear pads. All sizes.... **\$6**

No. 5. Chocolate leather, lined with satin-silk. Medium weight. Fitted with powder puff ear pads. All sizes..... **\$5**

N. B. Army Type

No. 1. Chocolate leather, lined with heavy soft sheepskin wool. Extra heavy winter weight. All sizes..... **\$7.50.**

No. 3. Chocolate leather. Lined with soft corduroyed velvet. Medium weight. All sizes..... **\$6**

No. 7. Dark chocolate leather. Lined with brown up Fuzzed lining. Medium heavy weight. Fitted with powder puff ear pads. All sizes..... **\$4**

Commercial Type

No. 1. Soft light-colored Leather with high grade fur lining. Extra heavy winter weight. All sizes..... **\$7**

No. 3. Soft, dark and light-colored leather. With heavy soft sheep wool lining. Extra heavy weight. All sizes.... **\$6**

No. 5. Black or brown leather, with corduroy lining. Medium weight. All sizes **\$4**

No. 6. Brown suede with corduroy lining. Medium weight. All sizes..... **\$4**



N.B. COMMERCIAL

Order Direct from This Advertisement!

NICHOLAS-BEAZLEY AIRPLANE CO., Inc.

"We Will Be Here Tomorrow"

250 NORTH ST.

MARSHALL, MO.

Service ceiling7,000 feet
Rate of climb at ground...370 feet per minute
Climbing speed at ground.....75 m.p.h.

The plane is designed and constructed to meet the load factors required by the U. S. Department of Commerce.

Wings are of wood and wire construction, the spars being of conventional box beam type. Drag bracing is of swaged wire. The external bracing is streamline duralumin struts and streamline wire.

The body is of steel and duralumin tubing and aft of the cockpit, steel tie rods are

used for diagonal bracing. The covering is fabric.

Tail surfaces are of steel and duralumin tubing, fabric covered. The stabilizer is adjustable in flight from the pilot's cockpit. The front portion of the fin is also adjustable in flight to assist in control with an out-board motor dead.

The landing gear is of steel tubing. 44 x 10 wheels, with brakes, are provided, and the shock absorbing device is the well-known Boeing oleo unit. The brakes are controllable either together or individually from the

pilot's cockpit. The tailskid is a 15-inch wheel, with a steel tire 5-inches wide, which can move through 180 degrees to accommodate turning in a small radius by locking one landing gear wheel. A special Boeing oleo unit is provided for absorbing landing shocks.

This airplane is designed for a reliable, commercial carrier. Comfort for passengers is given first consideration, but the large cargo space provided in addition to the passenger cabin makes this airplane ideal for both types of pay load.

FAIRCHILD CAMINEZ CAM ENGINE MAKES FUEL CONSUMPTION TEST

TWO fuel tests were recently conducted to determine the fuel consumption of the Fairchild Caminez Model 447 cam engine when used in a standard type commercial airplane. The purpose of these tests was to let the manufacturers who are using this engine know what fuel consumption they might expect at airplane cruising speeds and also to determine whether this engine would be suitable for long duration flights. The Fairchild Caminez Engine Corporation claims several special features in the engine which make it a suitable power plant for breaking the world's endurance record.

A preliminary flight of seven hours' duration was made on October 1 in a Waco-10 plane powered with a Model 447-B cam engine developing 135 h.p. at 1000 r.p.m. The plane carried pilot and observer. In this flight a cruising speed of about 80 miles an hour was maintained at an average propeller speed of 725 r.p.m. Thirty-four gallons of gasoline were consumed during this seven-hour flight, making an average hourly consumption of 4.8 gallons. The engine used 1¼ gallons of oil throughout the test, the average oil consumption being .18 gallons per hour. The engine used in this test was an old experimental engine that had been flown a total of over 100 hours without being overhauled previous to this flight.

For the second test, the gasoline capacity of the plane was increased to 110 gallons. In order to make this test official, Captain W. P. Hayes and Lieutenant J. Beveridge, jr., of the U. S. Army Air Corps, together with Assistant Professor O. H. Lundie of New York University, kindly consented to be the observers for the test and were present at the fueling of the ship and the sealing of the barograph used in the flight. This committee was also present at the end of the flight when the gasoline and oil tanks were drained, and broke the seal on the barograph and inspected the flight record.

The plane took off at 5:31 p.m. October 16 with 107 gallons of gasoline and 7 gallons of oil, which, together with pilot and instruments, made a total useful load of 1001 pounds. The plane had very little difficulty taking off with this load as was to be expected, for in a preceding test an altitude of 15,000 feet was reached with a useful load of 800 pounds.

The pilot's records show that after gaining altitude, the engine was throttled to 800 r.p.m., this speed being maintained for about two hours, after which the propeller speed was reduced gradually as the gasoline load decreased. At 6:00 a.m. the following morning, after 12½ hours of flying, the engine was turning at 690 r.p.m. Shortly after this, bad weather and rain set in and for 2 hours the pilot found it necessary to fly the engine at nearly full throttle in order to avoid the rain as much as possible. At 10:51 a.m. the pilot landed the ship, finding visibility too poor and conditions unsuitable for obtaining fair data on average gasoline consumption for this test.

When the plane landed, 21 gallons and 2¼ quarts of gasoline were drained from the tanks, making a total gasoline consumption of 85.44 gallons. The flying time was 17 hours and 20 minutes as shown in the barograph record. The hourly consumption of gasoline was 4.9 gallons. The oil tank was also drained and 5½ gallons of oil had been consumed making a lubricating oil consumption of .33 gallons per hour.

The low fuel consumption of the engine is caused by several factors inherent in this type of cam engine. Due to the high mechanical efficiency, together with the high thermal efficiency of the engine, the specific fuel consumption of the cam engine at cruising speeds with a normal compression ratio of 5 to 1, is only .45 pounds per b.h.p. per hour. The high mechanical efficiency of the engine is due to the use of anti-friction bearings of the ball-and-roller type throughout, together with the absence of gearing and auxiliary valve actuating mechanism, the push rods in this engine being driven directly from the main cam shaft, which takes the place of the crankshaft in the usual crank engine.

The high thermal efficiency of the engine is due to the efficient cylinder design employed, together with the very effective manifold and carburetion used on the engine. The engineers of the Fairchild Caminez Engine Corporation also claim that the piston motion obtained by the cam mechanism produces a more efficient cycle than the crank mechanism in an internal combustion engine.

The cam principle of the Fairchild Caminez engine secures half propeller speed at the same piston speed of the crank engine without using gear reduction. The cam engine therefore operates at slow propeller speed, and the large diameter, more efficient, slow speed propeller is also responsible for securing low fuel consumption in flight. The efficient large diameter, slow speed propeller is particularly effective in this case, due to the small frontal area of the engine, together with the low power plant weight.

The small engine behind the big propeller not only cuts down the head resistance of the power plant to a minimum, but also adds to the effective propulsive length of the propeller. It is found that not only is the fuel consumption in actual flight much less for this engine than would be expected from its maximum power output, but by using the large diameter slow speed propeller, the engine gives the plane much better take-off and climb characteristics than can be obtained with the high speed crank engine of equal or slightly greater power output.



The 135 horsepower Caminez—engined Waco 10 in flight



THE BIG 3 IN FLYING

1. The bangars where our students are taught everything that makes a successful pilot. 2. Students being taught the mechanical end of aviation. 3. Students being taught the actual construction of an airplane. 4. Student ready to take his first flying lesson. 5. Lieutenant John H. Miller, former instructor at Great Lakes and Pensacola, Florida, now our Chief Instructor. 6. One of our theory classes. 7. E. Scanlon, instructor at the present time at Great Lakes and also our assistant instructor.

THINK of the men who teach you flying at our airport. THINK of all we have to offer you, THINK of the short time it takes to be a big paid pilot.

ONE - TWO - THREE and you can be a successful flyer. 1. Theory. 2. Shop Training. 3. Actual Flying as pictured above. After leaving high school or college and you try to secure a job you are asked "how much experience do you have?" You do not need to worry about such questions after you have completed our course, because you HAVE the experience and can step into a BIG PAID JOB.

Mail This Today →

CHICAGO AERONAUTICAL SERVICE



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CHICAGO AERONAUTICAL SERVICE
ROOM 1120 608 S. DEARBORN ST., CHICAGO, ILLINOIS

WESTERN NEWS

GOEBEL TO RECEIVE CONGRESSIONAL MEDAL

COLONEL ART GOEBEL, winner of the Dole air race to Hawaii, will fly the *Woolaroc* to Washington, D. C., where President Coolidge will present him with a Congressional Medal of Honor for his Hawaiian flight. He will be accompanied on the flight by Attorney Herman S. Shapiro of Los Angeles who has offered a \$10,000 prize for the first licensed flier transporting a paying passenger from New York to Europe. Colonel Goebel is reported to be considering competing for the prize.

RYAN CORP. TO BUILD RYAN-SIEMENS MOTORS

THE Ryan Aeronautical Corporation is headed by T. Claude Ryan, formerly president of the Ryan Airlines, Inc., and designer of the original Ryan M-1 monoplane. Mr. Ryan left the Ryan Airlines, Inc., now the B. F. Mahoney Aircraft Corporation, last April and now announces the formation of the Ryan Aeronautical Corporation to engage in the airplane motor business, with headquarters in San Diego.

After extended negotiations with the Siemens & Halske Company of Berlin, Germany, the Ryan Company has taken over the exclusive distribution and manufacturing rights in the United States for the Siemens line of airplane motors.

The Siemens motors are widely known in Europe, being extensively used in commercial and private flying. The Siemens & Halske Company, one of the largest industrial companies in Europe, has been manufacturing air-cooled airplane motors since 1914. Since 1917 it has specialized in manufacturing the radial type.

Siemens motors are used as standard equipment on twelve established airways in Europe. During 1926 alone these engines flew over one million miles.

The Siemens engines will be marketed in the United States under the name of Ryan-Siemens. A complete stock of parts is maintained at San Diego and through dealers parts will be made available throughout the United States. Manufacturing will be for the immediate future continued in the Berlin plant. The Ryan Corporation will begin manufacturing in this country as soon as preparations can be completed to do so.

LOS ANGELES - PHOENIX REALTY AIRLINE

A NEW airline for the accommodation of real estate investors was opened on October 15 between Los Angeles and Phoenix, Arizona, sponsored by Alexander Hursh, real estate dealer.

Major Livingston Irwin will make a daily trip between the two centers.



Nick B. Mamer, who recently started the Mamer Flying Service at Spokane, Wash.

MAMER FLYING SERVICE

THE Mamer Flying Service was recently incorporated at Spokane, Washington, with Clarence Paulsen as president and Nick B. Mamer, veteran Spokane pilot, as vice-president and general manager. The company is incorporated for \$50,000, fully paid, and no stock is being offered for sale.

Complete aerial service, including student training, cross-country trips, aerial survey work and other lines are afforded and the company has the agencies for Buhl and Swallow airplanes. Lieutenant W. H. Williams is one of the company's pilots.

BEACON TOWERS AT LA JOLLA, CALIFORNIA

FOUR self-supporting steel beacon towers, each provided at the top with an 8-foot diameter target, have been completed north of La Jolla, California. Towers T1 and T3 are located near the paved highway (Coast Route) leading to Los Angeles; the two remaining towers are located on top of the bluff approximately 1.5th mile eastward from the beach line. The height and location of each tower is as follows:—

Tower T1	lat. 32° 53' 35" N.
Height 45 ft.	long. 117° 14' 27" W.
Tower T2	lat. 32° 54' 35" N.
Height 105 ft.	long. 117° 14' 58" W.
Tower T3	lat. 32° 53' 35" N.
Height 45 ft.	long. 117° 14' 40" W.
Tower T4	lat. 32° 54' 35" N.
Height 115 ft.	long. 117° 15' 09" W.

Due to the fact that these towers are located in the main air lane between San Diego and Los Angeles it is considered advisable that all pilots be informed of the location of these towers in order to obviate possibility of collision during foggy weather.

TEN BACH AIR YACHTS FOR NEW AIRLINE

THE West Coast Air Transit Company of Portland, Oregon, formed and owned principally by officials of the Pickwick Stage System, will commence operating daily airline service between Seattle and Los Angeles on the first of the year. The company, through their general manager, Charles V. Eakin, have placed an order with the Bach Aircraft Company for ten Bach Air Yachts, each powered with a Pratt and Whitney Wasp located in the nose and two 100 h.p. Kinner air-cooled engines under the wing, giving the ship a guaranteed high speed of 150 miles per hour.

DENVER AIR NEWS

A LARGE white arrow has been constructed recently by Van Schaack & Company, an aggressive real estate concern of Denver, on the roof of the First National Bank Building in the heart of the financial district of Denver. Pointing the way to Lowry Field, it serves as a beacon and guide to visiting aviators. It is constructed of wood painted white and measures 16x110 feet, showing up clearly at 5,000 feet elevation against the dark background of the downtown roofs.

THE Air Service Club of Denver, with headquarters at Lowry Field, consists of Air Corps officers of the 103rd Division Reserves and the 45th Division Air Service Colorado National Guard, and is organized for the purpose of promoting interest in aviation and to foster and encourage the development of aeronautics.

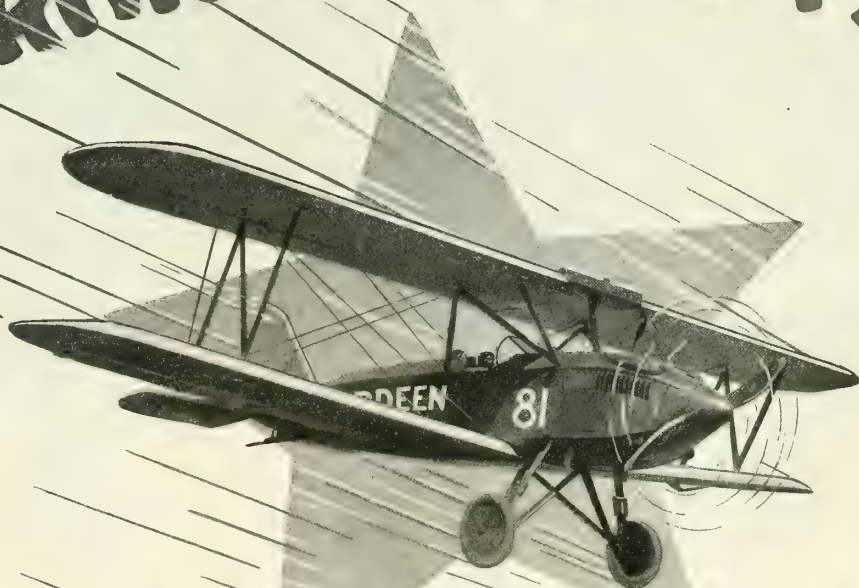
TWO hundred and fifty members of the Denver aviation fraternity attended a banquet on October 20 in honor of Leslie C. Miller and James S. Charles, recent National Air Derby winners. The event was particularly appropriate in that the 200th Eaglerock was christened the day before by Mary Katherine McIntosh, juvenile movie actress for the Alexander Film Co.

An average of nearly one-half of the two-a-day production of the Alexander Aircraft Co. has been going to California for several weeks. By actual count, there are now over seventy Eaglerocks in that state which is more than all other makes of commercial planes combined.

WESTERN AIR EXPRESS GETS AIR MAIL BID

THE Western Air Express of Los Angeles has been awarded the contract for carrying mail by air between Cheyenne, Wyoming, and Pueblo, Colorado, via Denver and Colorado Springs. This company was low bidder at 83c per pound.

INTERNATIONAL F-17



The WINNER!

CLASS B SAN FRANCISCO TO SPOKANE AIR DERBY

FIFTY minutes in the lead of its nearest competitor, the standard OX5 model International F-17, "City of Aberdeen", piloted by Cecil Langden swooped down to the waiting throngs at Felt's Field . . . winner of the Class B San Francisco to Spokane Air Derby.

Two things were responsible for this glorious victory . . . skillful piloting and unexcelled performance. From the flashing take-off to its triumphal arrival at the goal, the flight of the "City of Aberdeen" stands forth . . . a shining proof of

the skillful engineering, expert craftsmanship and surpassing quality of International Airplanes.

Still additional honors were captured for International Aircraft when a standard F-17 Whirlwind Model came in a close second in the Class A San Francisco to Spokane Race, totalling two Internationals "in the money" at the National Air Meet.

With this concrete demonstration of the superior performance of International ships, we solicit the investigation of dealers and individuals, in the sincere belief that our product represents the best in modern aircraft.

INTERNATIONAL Aircraft CORPORATION
LONG BEACH, CALIFORNIA

"BUILT TO A STANDARD :- :- :- NOT TO A PRICE"

CONTACTS

By FRANK E. SAMUELS

THE more one rides in the Bach Air Yacht the more one is impressed with the maneuverability, comfort and speed of this ship. Recently I was invited to join a party of seven cabin passengers and two pilots on a trip to try out the handling of the plane with different combinations of the three motors.

Taking off from Clover Field with an exceptionally short run, we climbed to 2,200 feet altitude in less than three minutes. In a short time we attained a speed of 110 miles an hour when Mr. Waterman, who was at the controls, throttled the two wing motors down to their minimum. The ship retained a speed of 95 m.p.h. with the nose motor alone. He then opened up the throttle of the two Kinner motors, which are installed on either side under the wing, throttled down the nose motor and the ship flew along retaining a speed of 85 m. p. h. The automatic stabilizer worked perfectly, enabling us to fly indefinitely with it alone at a perfect level. The large oleo shock absorbers give the ship a smooth landing and the brakes enable it to be turned shortly on the ground as well as stopped quickly.

WALTER A. HAMILTON, after his experience at Spokane, knows considerable about Whirlwind motors and should be able to give owners of them perfect service when he gets his shop completed and is ready to take on the work. Kenneth Boedeker, sales service manager of the Wright Company, gave Ham many good points which he has stored away for future reference.

BETWEEN Paul Richter, Jack Frye and Lee Willey, all of the Aero Corp. of Calif., they managed to win five second, one third and one sixth prize at Spokane, and as Paul says, "if our gas had not frozen up coming down from Spokane, we would have had first and second place in the Spokane-Portland race," as he and Lee were both in the lead when they both had to set down in a grain field, 50 miles north of Pasco, which, by the way, is some windy town. There are times when the mail plane comes in that all the boys in the hangar have to rush out and pull the wheels down to the ground, to enable the pilot to make a landing.

N. C. LIPPIATT in his Whirlwind Travel Air surely set a pace for the other contestants of the Pacific Coast Derby but he had to keep going all the time as Lee Schoenhair in the Whirlwind International was close behind him all the way from San Francisco to Spokane. The motors of both planes functioned perfectly and neither flew five miles off the compass course.

THE American Aircraft Corporation, California agents for Waco planes, now make their headquarters at their new flying field on Mesa Drive where they are building a modern airport with the latest hangars, shops and administration building. A car load of Waco-10s was received recently and before they were assembled a line of buyers, who had been waiting some time for deliv-

ery, were there ready to fly them away, much to the satisfaction of Mr. Hull, Charles (Doc) Whitney and J. B. Alexander.

This corporation has taken over the California agency for the Fairchild All-Purpose monoplane and has just taken delivery of their first cabin plane, a four-passenger and pilot job. I understand from Mr. Hull that the first one is already sold to one of our West Coast airline companies.

PILOTS flying up or down the San Joaquin Valley should make a call at Visalia where they will receive service that is service. Circle the town and before you reach the flying field, which is right off the main highway, a Standard Oil truck will be there to service you. A. A. Clark, director of the Aeronautical Division of the Chamber of Commerce, will look after your comfort while you are there, whether for an all night stop or only to fuel your ship. If you arrive in the evening or at night, a high tower with an electric sign "VISALIA," seen for miles, will guide you to a large flying field, level and with a long runway. There is someone at the field day and night, and a telephone on the outside of the office for emergency calls.

ROGERS AIRPORT on Mesa Drive seems to be the headquarters of pilots from all parts of the country when arriving at Los Angeles, and one can always see many different types of planes parked there. At present the Hamilton all-metal cabin plane, the all-metal tri-motored Ford and two new Travel Air biplanes hold the interest of the visitors. Jim Webster always gives the pilots a hearty welcome and encourages them to make their stay as long as possible. Jim has just bought a new and latest model Ryan B-2 Brougham.

CASEY JONES has made quite a long stop at Los Angeles visiting the Army fields and commercial airports, as has Lieutenant Doolittle, that prince of stunt and race pilots. Eddie Stinson, in the ship in which he made the try for the non-stop race from New York to Spokane, has also been visiting the principal airports of southern California, where the ship drew considerable attention wherever he made a landing. Less than 200 miles separated him from the \$10,000 prize when a broken cylinder valve put him out of the race.

A QUICK buy was made recently by Verne Gorst, president of the Pacific Air Transport. At 11:30 a. m. he drove up to the Aero Corporation of California, made an offer for the Fokker Universal that was used for the AERO DIGEST official press plane of the San Francisco-Spokane Derby, and at 2:30 p. m. he and two of his friends flew off the field, owner of the plane.

STANLEY SHORT, of the Short Air Field, reports that his new Bach CS-4 cabin biplane is being kept on the go with passengers to San Diego and other cross-country flights and that everyone is pleased with the plane and its performance. Stanley has just secured the services of Clare Prichard as chief instructor and a number of

new students have signed for the course of instruction that Clare can so ably deliver.

LEE SHOENHAIR is installing a converted, air-cooled, superposed Salmson 230 horsepower motor from the Menasco Motors Company in his Stearman biplane. When completed Lee will make a tour of the principal cities demonstrating the motor and placing local agencies for Mr. Menasco.

SALES MANAGER SPEAR of the International Aircraft Corp. is in the east, and reports having sold a number of different models of International planes. Spear is also closing contracts with agents in the different territories and reports a steady and growing demand for planes.

J. W. MONTEE, veteran pilot of Clover Field, has successfully passed his test for the Department of Commerce Private Pilot's license, and his many friends rejoice with him on this realization of one of his greatest ambitions.

Montee, who was the first aviator to erect a hangar at Clover Field, is nearly 65 years of age, although he looks to be a man about 45. In the landing test Montee brought his ship to a stop within three feet of a given mark. He put his plane through five more figure-eights than were required and generally gave as pretty an exhibition of flying as was ever seen at the field.

Montee is deeply interested in the plans now being formulated by the city fathers for improving and bringing up-to-date the facilities at Clover Field.

CAPTAIN T. C. WILKINSON, head of the Universal School of Aeronautics, reports receiving 165 replies from their advertisement in the August issue of AERO DIGEST and 126 replies from the September issue, and that a number of the replies have proven productive of results. The attendance at the lecture courses, which the school is holding, has grown so fast that they were obliged to add two more evenings to this branch, and lecture classes are now held Monday, Tuesday, Thursday and Friday evenings. The 28 students who are attending these lectures are composed entirely of pilots, lecturers, instructors and student pilots, desirous of passing the Department of Commerce license examination for transport pilots. There are two classes of lectures: one of aerial navigation and one of aeronautical meteorology.

THROUGH the courtesy the Maddux Air Lines and by invitation of Edward A. Bellande, senior pilot of the line, I made my regular monthly trip to San Diego in their tri-motored, all-metal Ford plane. Sharing the cockpit with Jack Wiles, chief mechanic of the line, and with Bellande at the controls, we left Rogers Field at 10:30 a. m. October 19.

The big ship left the ground with a shorter run and more smoothly than many of the smaller planes. After an hour and fifteen minutes flying over what I consider one of the most beautiful air routes in America, we put down at the Mahoney Air Field, 115 miles from Los Angeles.



Sisterships

The Spirit of St. Louis and the New RYAN BROUGHAM—Five-Place!

THIS new five-place Ryan Brougham... developed from the famous plane designed and built for Colonel Lindbergh... reflects in quality and workmanship a concentration on a single type and model. It is thoroughly engineered, tested and proven. The interior, completely upholstered in mohair, has ample room, comfortable seats, perfect visibility, and is easy of access. Ownership of a Ryan Brougham assures you the utmost in a modern airplane. ❧ ❧

Luxurious in Appointments. Distinctly Individual. Wright Whirlwind Equipped,
❧ ❧ \$9,700 at San Diego. ❧ ❧



The B. F. MAHONEY AIRCRAFT CORPORATION, San Diego

WORLD FLIGHT MEET TO BE HELD NOV. 13

THE Third annual celebration commemorating the finish of the world flight of the Army Air Corps at Clover Field, Santa Monica, Calif., was postponed from October 9, as announced in the October issue of *AERO DIGEST*, to November 13. The races for military type aircraft will bring entries from Crissy Field, San Francisco; March Field, Riverside; Rockwell Field, Coronado, and North Island, San Diego. Civilian aviators will compete for \$1,500 in prizes.

NORTHWEST AIR NEWS

By F. K. HASKELL

GOOD results are already being felt in Spokane as the result of the air races. Among these is the purchase made by Clarence Paulsen of a Buhl Airedan. G. L. Meister, of the Buhl Aircraft Company, sold the plane which he flew out to the races through N. B. (Nick) Mamer, who is representing the Buhl planes in the Northwest.

C. V. EAKIN, northwest representative of the Pickwick Stages, Inc., has been made president of the newly organized West Coast Aerial Transport Company, which will commence operations on December 1st. The tri-motored planes to be used on this new coast route will be manufactured by the Bach Company of Los Angeles.

Other officers of the new transport company are: Bert Wren, secretary; Mrs. Mary Bollam, general passenger agent; John Hutson in charge of express. Wren and Mrs. Bollam are officers of the Pickwick Stages and Hutson is manager of the Oregon Motor Stages, Inc. The new line, however, will have no connection with the Pickwick organization, the officers having been chosen only for their knowledge of coast traffic conditions.

The first service inaugurated will be between Portland and Seattle with two round trips daily. Portland to San Francisco will be the next line and later the service will be extended to Los Angeles. At present the Rankin field will be used here. Rates for express are set at 50c a pound and passenger fare equivalent of regular railroad plus Pullman.

THE Varney air mail route between Salt Lake City, Boise and Pasco, Wash., had an efficiency percentage of 84 for the first six months of 1927. Out of 332 scheduled trips 278 were completed, 26 were listed as incomplete and 28 were not started due to weather conditions and darkness. Route reports show that 147,340 miles were flown, with 22,612 pounds of mail carried and an air mail income of \$67,838.

CLYDE C. WANN of Portland, vice president of the Yukon Airways and Exploration Co., Ltd., who some ten years ago went up to Whitehorse on the Yukon, returned again to the northland recently with the first of a fleet of planes to conquer the Alaskan wastes. Wann's company purchased a Ryan monoplane, named *Queen of the Yukon*, for carrying passengers and mail.

During their northern flying Whitehorse will be the base and the route will be to



The Queen of the Spokane National Air Derby, Mrs. Vera Cunningham, giving the Aero Digest Sport Plane Trophy to E. B. Heath. Walter Evans, president of the executive committee of the National Air Derby Assn., presenting Capt. Tom Symons with the Aero Digest Trophy for the National Guard Speed Race.



Mayo, Keno and Dawson to the north, south to Skagway and east to Atlin and Engineer, B. C. The plane is to be equipped with ski runners for winter use and it will be comparatively easy to use the countless frozen lakes of the Yukon country as landing fields. It is expected that many big game hunters will take advantage of the new transportation offered into the heart of the big game country which can be accomplished in a few hours, instead of using the old method by dog team, which take a week or more.

THE National Air races and air derbies held at the Spokane airport September 21-24 under the direction of the National Air Derby Association of Spokane, fully paid their cost. Figures of the certified public accountants showed receipts of \$114,063, and disbursements of \$113,106, leaving cash on hand of \$965. Close adherence was made to budgeted expenditures.

THE Langham Electric and Engineering Company of Portland have recently added a Davis monoplane to their delivery fleet, which is found to be a wonderful asset in carrying motors and parts to outlying lumber companies in various parts of Oregon.

OFFICIALS of the Great Northern Railroad are making plans for the operation of airplanes in connection with their railroad to give tourists a birds-eye view of the northwest, according to Charles M. Montieth, chief engineer of the Boeing Airplane Works.

One plane will be used for circuit tours of the Glacier National Park, and the other will be used to give westbound passengers the alternative of a 3-hour airplane trip from Spokane to Seattle over the Cascade mountains.

The new 12-passenger tri-motored planes now under construction at the Boeing plant for use on the San Francisco-Chicago air mail routes will be in service by July 1st. These planes will be capable of a speed of 100 miles per hour.

A NEW time record for airplane flights from Seattle to San Diego was made during the past week by Lieut. Frederick R. Buse, U. S. N. He flew a new Boeing type plane from the Seattle factory to San Diego in 9 hours and 30 minutes. Only one stop was made, when he landed at San Francisco for fuel.

SACRAMENTO AIR NEWS

By E. J. CARNES

WITH work on the new municipal airport, which hereafter will be known as "Lindbergh Field," rapidly nearing completion, Sacramento this winter probably will witness the greatest activity in the history of local aviation.

The field, located seven miles northeast of the city, between the Southern Pacific railway tracks and Auburn Boulevard, at present has a graded runway of about 1500 by 500 feet in the direction of prevailing winds. The runway later will be lengthened to about 2,000 feet.

THE newly organized firm of Andrews, Nicholson and Morris, formerly Andrews and Nicholson, have taken a five-year lease on the field, and an administration building, refreshment stand and gas and oil station have been erected. A new corrugated iron hangar, 50 by 52 feet, is well under way, and will have the company's repair shops in it. Individual hangars for private planes will be constructed as the need arises.

This company has secured the agency for the Fisk International biplane, and are using one of the ships for passenger work, photography and student instruction. Nine students are on the rolls at present, about half of them doing advanced work. H. G. Andrews, chief pilot for the company, has been kept busy during the summer doing aerial mapping and instruction work.

A three-place OX5 thick-wing steel fuselage job of conventional design is being completed by the company. It is the intention of this firm to build a number of light monoplanes during the fall and winter months to sell for from \$1200 to \$1600, according to the engine used. This job will be a steel tubing, semi-parasol type for a pilot and passenger.

H. M. SALISBURY of Walnut Grove, in conjunction with H. G. Andrews, has designed and built a small biplane which is now ready for covering. This little bus will be powered with a Pope motorcycle engine. It has a 20 foot span and is 13 feet long.

Ingvald Fagerskog, who has a large hangar across Auburn Boulevard from the municipal field, has three Jennies and a



The Forward Cabin—Bach Air Yacht

BACH AIRCRAFT COMPANY
Clover Field Santa Monica
California

Tommy in the air at various times, and is working on several students.

Milton Tucker, a recent graduate of the Ingvald Flying School, built a new OX5 Jenny and has been in the air nearly every day lately.

Carl Sweeney is installing an OX5 in a light monoplane which he recently finished. It is a two-place bus with a spread of about 30 feet.

Kenneth Blaney will have a two place OX5 biplane flying within the month. He designed and built this plane himself, and aviators who have inspected it believe it will be a "sweet" flying bus. Blaney is now covering the wings.

THE Irwin Airport, which was located south of the city, has been dismantled and the Irwin Meteorplane shops moved into the city. Jack Irwin built a snappy looking little biplane for the races last month at Spokane, but due to the breakage of both wheels in a test hop at the Spokane Airport, failed to start in the light plane races. The tiny racer had a span of 14 feet, and an overall length of around 12 feet. It weighed about 170 pounds empty, and was of plywood construction.

Flying a standard Meteorplane with a 20 h.p. Meteor motor, Irwin brought home a large silver loving cup emblematic of first place in the performance contest of an air meet at Visalia in August.

THE Boeing Air Transport, which flies the mail contract eastward from San Francisco, is at present using Mather Field,

the government air field east of the city, for its landings here, but it is expected that they will avail themselves of the municipal airport when that field is fully completed.

BERT LANE of Willows, and C. C. Allen of Sacramento, with OX5 and Hisso Standards, respectively, have moved to Stockton where Lane is manager of the Stockton Airport. Allen reports that there are four hangars on the field, together with gas, oil and repair facilities. Besides their Standards, two Jennies are kept at the field. Landing lights and beacons are expected to be installed within sixty days.

PORTLAND AIR RACES

By F. K. HASKELL

DESPITE adverse weather conditions, Portland's air races were carried out on September 28th witnessed by thousands of spectators who watched the events in a drenching rain on Swan Island aviation field.

The first to cross the finish line in the Class B Spokane-Portland derby was Leslie C. Miller of Des Moines, Ia., in an Eaglerock, thereby winning the \$1,000 first prize. The time elapsed after his start from Spokane was 4 hours 31 minutes 55 seconds.

Eleven minutes 29 seconds slower than Miller was C. W. Meyers of Detroit, Mich., flying a Waco-10, who was awarded second prize, \$500.

Gerald F. Smith, Tacoma, Wash., in an Eaglerock, took 6 minutes 26 seconds more than Meyers and won the \$250 prize.

E. J. Detmer, of Tarrytown, N. Y., flying a Travel Air, placed fourth with an elapsed time of 4 hours 59 minutes 59 seconds.

Jack Parshall, Portland, won fifth place in his Eaglerock in 5 hours 2 minutes 50 seconds.

Tex Rankin, Portland, placed sixth among the 13 entries.

The stunt contest between Lieut. Doolittle of the Army, and Lieut. Sanderson of the Marine Corps, proved most popular as they both turned loose everything they had in the pursuit plane race. While the race was won by Lieut. Jeter, flying a Navy Boeing, the big performance of the race was staged by Doolittle who pressed Jeter all the way and showed his rudder to the two other Navy contestants, both piloting planes of superior power.

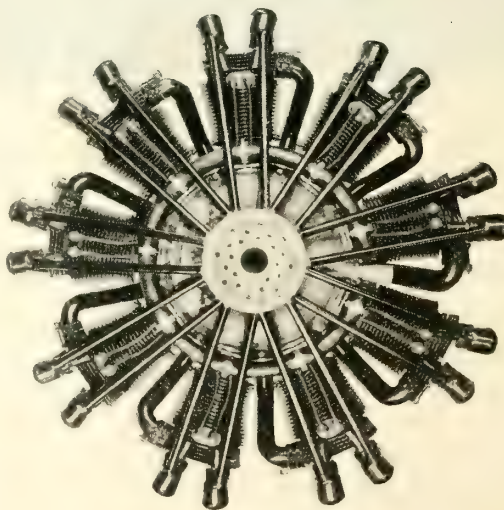
Doolittle was piloting an Army Curtiss with a h. p. of 435 as compared with 512 h. p. of the Navy planes. Theoretically, fourth place was the best the stunt flier could expect. But theory was not traveling as a passenger with the determined and misnamed Mr. Doolittle. He made up for his lack of power by skillful handling. He flew close to the ground or the river every foot of the 35-mile race—about 500 feet lower than the other pilots. He banked at steep angles on the turns. The net result was that he came in on the heels of his faster rival with an average speed of 140.93 miles an hour. Lieut. Jeter averaged 146.96 miles an hour for the course. Another Army flier, Lieut. Cornelius, made a great race

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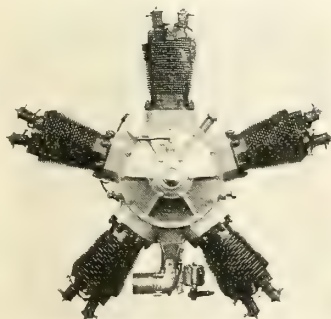
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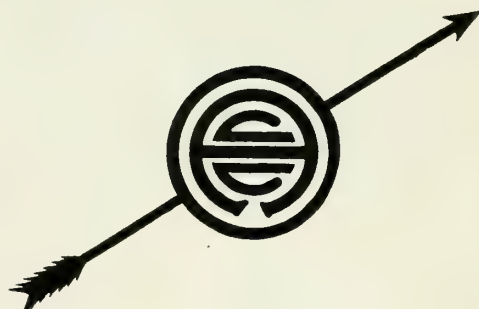
ON Sept. 3, this Kinner Motor in a Kinner 3-place Airster, with a useful load of 575 pounds, completed a perfect trip from Glendale, Calif., to Boston, Mass., via Salt Lake. Only 240 gallons of gasoline and 5 quarts of oil were used. At Cherokee Field, Wyo., elevation 7080 feet, the ship, fully loaded, took off in 500 feet. The route covered 3500 miles. Could anything better be done to prove this product?

Price of plane complete\$3350

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against Lieut. Regan of the Navy, but the faster plane won third with an average speed of 140.41. Cornelius was fourth with an average of 136.16. Lieut. Woodring came in fifth and Lieut. Commander Bogan of the Navy, sixth.

Despite a continuous downpour both the Army and Navy stunt fliers entertained the huge crowd and it was difficult for the judges to pick out the winner, both Sanderson's and Doolittle's work being considered practically on par. However, Doolittle was given first place on account of his entering all events of the day.

In the ten-lap speed race for commercial airplanes J. P. Wood of Wausau, Wis., flying a Waco-10, won with an average time of 111.3 m. p. h. N. B. Mamer of Spokane flying a Buhl Airster was second averaging 100.04 m. p. h.

The race for observation planes, a strictly military event, brought out a dozen Army, Navy and Marine Corps planes, evenly divided between DeHavillands and Douglas O-2s. The ten-lap race was won by Lieut. Taylor of the Army in a Douglas. A DeHavilland, piloted by Lieut. Beverly of the Army, annexed second and two Douglas' with Lieuts. Burgess and Grant, both Army, got third and fourth. Taylor's average for the distance was 106.92 m. p. h.

Only three planes were entered in the small commercial OX5 race, which was won by Charles W. Meyers in a Waco-10. Paul E. Richter, jr., Los Angeles, flying his Eaglerock, took second. Tex Rankin, third entrant, dropped out before the completion of the race. Myers made the five laps in 13 minutes 26.67 seconds for an average of 83.87 m. p. h. Richter made the course in 13 minutes and 40.63 seconds, an average of 82.45 m. p. h. Prizes were \$100 and \$50.

Eddie Stinson in his monoplane *Miss Veedol* won the final event for large capacity planes making ten laps in 24 minutes 8.78 seconds, averaging 93.40 m. p. h., beating Duke Schiller in the *Royal Windsor*. Prizes were \$100 and \$50.

C. W. "Speed" Holman, St. Paul, Minn., in his Laird Commercial, winner of the New York-Spokane Class A derby, took first place in the Spokane-Portland race on September 29th, in 27 seconds less flying time than his nearest competitor. Holman left Spokane two minutes behind E. E. Ballough, also in a Laird Commercial, and roared across Swan Island at 4:51:52, one minute and 33 seconds behind Ballough. Holman took the \$1,000 prize; Ballough, the \$500 prize.

N. B. Mamer, Spokane, winner of third place in the New York-Spokane race, flashed his Buhl Airster across the line in 8 minutes and 23 seconds longer flying time than Holman. He arrived at 4:59:05 and won the \$250 prize.

Fourth place was taken by H. C. Lippiatt, Los Angeles, who brought his Travel Air across the line at 5:10:20. His flying time was 3 hours and 20 minutes. Norman A. Goddard was forced down after reaching the Columbia river. Lieut. Peterson of the reserve corps, Spokane, was also forced to make an emergency landing at Camas. Rainy weather caused considerable delay in the vicinity of both cities.

WITH THE PACIFIC COAST AIR DERBY

By FRANK E. SAMUELS

THROUGH the courtesy and invitation of the Aero Corporation of California and with Jack Frye, president of the corporation, as pilot, their Fokker Universal became the AERO DIGEST official press plane of the Pacific Coast Derby from San Francisco to Spokane, and I am indebted to them for a twelve-day trip, full of excitement, fine flying, wonderful racing and, in fact, the event of my young life.

At 9.45 a. m. Monday, September 19th, we took off from the Aero Corporation field. We had with us C. F. Lienesch, associate engineer of the Union Oil Company, as a passenger and about 300 pounds of spare parts and tools for the three ships, the Universal and two Eaglerocks, which were entered in a number of events at Spokane, besides the baggage of Mr. Lienesch, myself and the pilots and passengers of the other two ships. With all this there was plenty of room for comfort in the cabin.

A beautiful day with not a cloud in the sky, but quite a strong head wind. Crossing over the Hollywood hills, we flew over San Fernando valley, Saugus, at the south end of the Automobile Ridge Route of the Sierra Nevada mountains, and the southern end of the San Juanin valley. Leaving Bakersfield on our right and Taft on our left, we flew directly over the town of Coalinga, and across the Coast Range. Dropping down to a low altitude, we flew over San Francisco Bay and along the coast, landing at Mills Field, San Francisco, at 1.30 p. m. just 3 hours and 45 minutes from the start at Los Angeles.

Tuesday, the 20th, was devoted to tuning up motors, drawing lots for place for the start of the race and a pilots' meeting, with Frank Flynn, director of Mills Field, presiding.

Mrs. Edwards, mother of Monte, vice-president of the Aero Corporation, met us on our arrival at the field and placed her car and chauffeur at our disposal during our stop at San Francisco. On the morning of the 21st she accompanied us to the field at 4 a. m. and stayed until the last ship had started on its long race.

What a sight it was: pitch dark, the field lighted by a huge beacon and field lights, a bank of fog over the bay into which every plane must disappear, and the fifteen Class B planes with their motors roaring, anxious to get under way.

At 5 o'clock Frank Flynn, the starter, dropped his flag and the lights flashed the start of the first plane, an Eaglerock, flown by Lee Willey of the Aero Corporation. Less than 15 seconds intervened between the start of each plane until they were all out of sight.

Before 6 o'clock, the time set for the Class A planes to start, the crowd had increased until there were over a thousand people present. Daylight, but still that old fog bank. 5.45 a. m., with five Whirlwind-motored planes on the starting line, warming up their motors. Having drawn last place for the start, we had the opportunity

of seeing the others hop off before leaving the ground. Then our thrills started, and there were plenty of them.

Flying across San Francisco Bay by compass, we headed for Berkeley just before reaching which the fog started to break. By the time we reached the Sacramento Valley the sun was shining, a beautiful morning.

Over the Sacramento Valley we dropped down to an altitude of 100 feet or less from the ground, flying at this height all the way to Redding, which we reached at 8.20 a. m. Here we stopped 12 minutes to gas up.

To those who have never flown in a race, at an altitude of 100 feet or less, going at better than 100 miles an hour, jumping telegraph wires and flying between trees, I can safely say that you are in the primary thrill class. I am glad that I have had the opportunity to experience it and that I have successfully graduated.

On leaving Redding, we had to pick up altitude very fast to cross the Sisque Mountain Range, just before reaching which we flew at an altitude of 7,000 feet along the edge of Mount Shasta. Snow covered at all times, a lone beacon seen for miles from every direction, it is a guide for aviators flying north or south.

After leaving Shasta and entering the bad lands, through Grants Pass, 50 miles or more of nothing but mountain tops and deep gullies with not a spot to set down on, we ran into the first fog that we had encountered since leaving San Francisco. We were just above tree tops with about a 500-foot ceiling and the fog getting lower. Jack Frye seeing a canyon ahead leading in the direction we wanted to go and hoping to cut off a corner of the course, headed for it. Then came my next thrill!

After flying 20 miles or more up the canyon, it turned out to be a blind one, with apparently not room enough to turn around to get out. Jack put the big ship into a vertical bank turn, with the wings absolutely up and down, and made the turn so close to the side of the canyon that our wheels brushed against the leaves on the trees. And to make it more interesting, the fog was closing in. Perhaps I didn't heave a sigh when we were safely headed out, the motor hitting perfectly.

The fog having risen a little, we followed the railroad the balance of the way into Portland, where we arrived at 12.50 p. m. for a 12-minute stop. The Chamber of Commerce boys had coffee and sandwiches for the pilots while gassing up the ships.

Leaving Portland at 1.02 we had the most beautiful country of the entire trip to fly over. Along the Columbia River we flew for about a hundred miles over the celebrated Columbia River Highway, with its pretty waterfalls, beautiful homes and pleasure resorts with their background of vivid colors. Just before reaching the junction of the Columbia and Rogue Rivers, we turned to the left flying over the pine forests and timber country, until at about 4 p. m. Spokane came into sight. Flying directly over the city, we made a quick drop, crossing the line at the Spokane Airport at 4.08 p. m.

0-2B plane built
by the Douglas
Company, using
HASKELITE.



Douglas again chooses HASKELITE

IN 1928 HASKELITE will be the only plywood used in Douglas planes. Back in 1924, when the Army Douglas Cruisers circled the globe, they had important structural parts of HASKELITE. This blood-glue plywood has been in Douglas planes ever since, and for three years before. The Douglas Company said in a wire: "We find by actual test, under long and severe service conditions, that HASKELITE is more impervious to water penetration than casein-glued plywood."

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NEWS OF THE AIR SERVICES

SCHIFF FLYING TROPHY

THE Herbert Schiff memorial trophy has been won by Lieut. Arthur Gavin, who has a record of 865 flying hours during the fiscal years 1926-27 without serious accident to personnel or materiel.

Lieut. Gavin is the third winner of this trophy, which was donated by the family of Lieut. Herbert Schiff, U. S. Naval Reserve Force, of New York City, to promote safe flying. Lieut. Schiff was killed in line of duty at the Naval Air Station, Hampton Roads, Va., on July 11, 1924.

Lieut. Gavin was born on October 13, 1895, at Ashland, Wis. He enlisted in the Navy during the war and while at the Naval Air Station, Pensacola, received the rank of ensign, in the Naval Reserves, in September, 1918, advancing in April, 1919 to the rank of lieutenant, junior grade, U. S. N. R. F., and, in July, 1919, was commissioned a lieutenant in the Regular Navy. In May, 1923, he was on duty with the aircraft squadrons, scouting fleet, and in 1925 was a member of the crew of the PN9-3 on the attempted West Coast-Hawaiian flight. In June, 1926, he reported for duty at the Naval Aircraft Factory, Philadelphia, where he is now stationed.

Capt. Harold C. Campbell, U. S. M. C., won the Schiff trophy in 1926 with a record of 839.40 hours without serious accident, and in 1925 it was won by Lieut. Reginald Thomas, U. S. N. R. F., on duty at Squantum, Mass.

NEW ARMY PLANES

A CONTRACT was made with the Curtiss Aeroplane and Motor Company for 35 O-2 type observation planes equipped with Liberty motors. Delivery will begin in December and continue at the rate of three each week. The planes will be allocated to various units of the National Guard.

Contracts are being made for one of the type of planes designated as the winners

in the contest for special observation planes, as follows: One model each from the Keystone Aircraft Corporation, the Douglas Airplane Company and the Curtiss Aeroplane and Motor Company. Upon receipt of the models they will be studied as to adaptability as four-purpose planes for the National Guard and organized reserves.

The Consolidated Aircraft Corporation, also, will soon deliver a model of a plane to be tested.

AVIATORS' POST NO. 743 ARMISTICE BANQUET

THE Ninth Annual National Aviators' Armistice Night Banquet will be held at the Park Central Hotel, New York City, under the auspices of Aviators' Post No. 743, American Legion, on November 11 at 7 p. m.

General James E. Fechet, the new Chief of Air Corps, Lieut. Lester J. Maitland, the first pilot to fly from the West Coast to Honolulu, and a list of nationally known airmen will speak. This gathering of war-time pilots and observers of the Army, Navy and Marine Corps has become a national institution and representatives of every squadron, field and seaplane base will be there.

RECORD MULTIPLE PARACHUTE JUMP

THE nine live parachute jumps which were made on September 24 from the Ford transport at the Naval Air Station, Anacostia, D. C., during one flight, is believed to be the record multiple parachute jump. Men from Anacostia, Quantico, and Lakehurst participated. The time from the first to last jump from the plane covered a period of 18 seconds, or an average of two seconds for each jump, from an altitude of 1,800 feet. The Irving regulation 28-foot training chutes were used.

MARCH FIELD, CALIF.

By E. M. SLAUGHTER

WHEN it is completed March Field, Riverside, California, will be the pride of the Army Air Corps. Ideally located in northern Perris Valley on level acreage, the new aviation post has every natural advantage at its command.

Major General Mason M. Patrick gave his approval to the general layout of the post, the Quartermaster's Department having immediately started work on plans and specifications which will include more than 225 buildings at an estimated cost of over \$2,000,000. Following the southern California custom, the Spanish architecture will be used. In the plans eight field officers' quarters are provided at an estimated cost of \$14,500 apiece. Seventy-five company officers' quarters are listed at an estimated cost of \$12,500. There will be 109 sets of non-commissioned officers' quarters. Four double barracks for squadrons also will be built.

On the field there are already six huge hangars but the new plans provide for four hangars, 70 by 500 feet. These will be thrice as large as those now being used and will house the field's complete equipment which is expected to be 120 planes. There will be bachelor quarters and a commodious clubhouse, a post exchange, and an administration building. A radio station will be erected, a photo laboratory, several large machine shops, Air Corps school building, Air Corps and Quartermaster's Department store and utility house, a number of large garages and tire stations, water pump houses and garage oil and gasoline storage tanks.

The recreation phase of the field is not to be neglected. In the plans are included tennis courts, theater, swimming pool, and a large athletic field. The work has already been started on the field hospital.

Major M. F. Harmon is commanding officer of March Field. Eighty permanent officers will be stationed at the field to instruct the cadets and carry on the administrative and other work of the post. Col. W. C. Gardenshire is construction quartermaster.

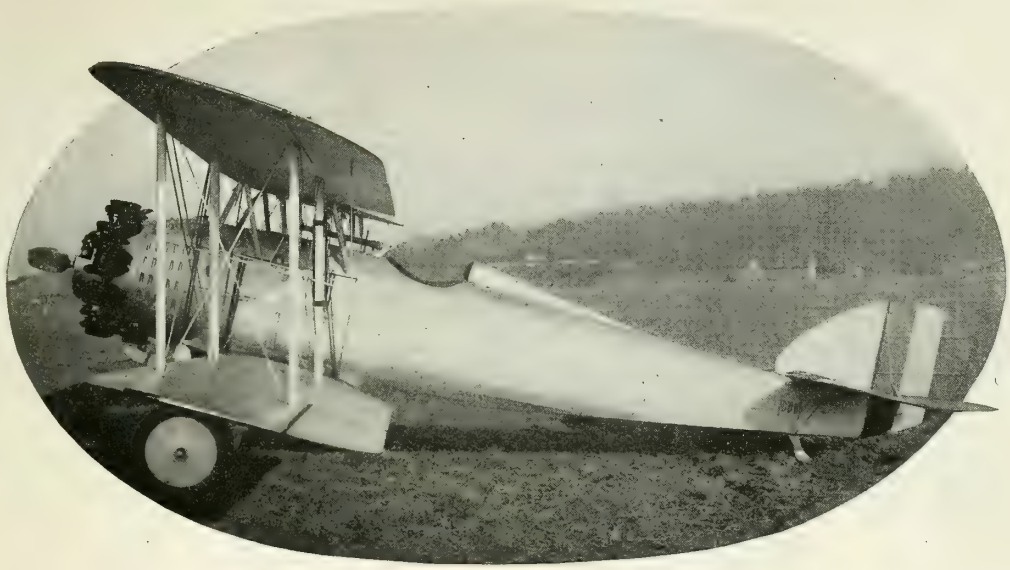
The second primary flying school will be officially opened at March Field about November 1st.

MAITLAND AND HEGENBERGER DECORATED

PRESIDENT COOLIDGE on September 29 presented to Lieut. Lester J. Maitland and Lieut. Albert F. Hegenberger, of the Army Air Corps, the Distinguished Flying Cross for their successful flight from San Francisco to Honolulu.



Official Army Air Corps photo
March Field, Riverside, California, the new Army Air Corps post.



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The service ceiling is more than 29,000 feet and the high speed at 20,000 feet altitude is 20 miles per hour greater than the high speed at sea-level.

They are also the first production airplanes in which superchargers have been used with air-cooled engines.



CHANCE VOUGHT CORPORATION

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ARMY AND NAVY AIR SERVICE ORDERS

ARMY AIR CORPS ORDERS

THE following Army Air Corps orders have been issued as of the dates indicated in brackets:

Anderson, 2d Lt. Kingsley S., Corps of Engineers, from 8th Engineer Battalion and duty at Fort Bliss, Tex., to Primary Flying School, Brooks Field, Tex. (Oct. 6)

Baker, 2d Lt. William E., Inf., transferred to Air Corps. (Oct. 6)

Barrett, 1st Lt. Carl H., Army and Navy General Hospital, Hot Springs National Park, Ark., to report to Army retiring board at headquarters Eighth Corps Area, Fort Sam Houston, Tex., for examination. (Oct. 12)

Bassett, 2d Lt. Charles A., from Brooks Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Bevans, 1st Lt. James M., Field Artillery, transferred to Air Corps. (Oct. 15)

Boland, Capt. Thomas, from Advanced Flying School, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Collins, 2d Lt. James H., from Brooks Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Colliver, 1st Lt. Harry F., from Advanced Flying School, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Cooper, 1st Lt. Russell H., from Balloon and Airship School, Fort Scott, Ill., to Fort Sam Houston, Tex. (Oct. 12)

Crosthwaite, 2d Lt. John C., Cav., detailed in Air Corps, from 6th Cavalry, Fort Clark, Tex., to Primary Flying School, Brooks Field, Tex. (Oct. 4)

Davies, 2d Lt. Clinton W., from 94th Pursuit Squadron, Brooks Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Davis, 2d Lt. Bell, Reserve, ordered to active duty for training; to report to procurement planning representative, San Francisco, Calif. (Sept. 28)

Davis, Capt. John Jay, Reserve, to active duty for training, to report to procurement planning representative, Chicago, Ill. (Sept. 28)

Doolin, 1st Lt. Bernard Michael, Reserve, ordered to active duty for training; to report to procurement planning representative, San Francisco, Calif. (Sept. 28)

Early, 2d Lt. James F. J., from Primary School, Brooks Field, Tex., to special observation course in flying, Advanced Flying School, Kelly Field, Tex. (Oct. 7)

Enos, 2d Lt. Louis Howard, Reserve, from Brooks Field, Tex., directed to proceed home. (Sept. 30)

Finch, 2d Lt. Ralph, relieved from 11th Infantry at Fort Benjamin Harrison, Ind., to Primary Flying School, Brooks Field, Tex. (Oct. 7)

Gaenslen, Capt. George Ralph, Reserve, order of Sept. 2 revoked. (Oct. 7)

Galloway, Capt. Floyd E., designated assistant commandant of Technical School, Chanute Field, Rantoul, Ill. (Oct. 3)

Garrett, 1st Lt. Kenneth, from 88th Observation Squadron, Brooks Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Hoag, 1st Lt. Earl S., leave of absence, 2 months, to March Field, Riverside, Calif. (Oct. 6)

Holland, 1st Lt. Harvey H., from Primary School, Brooks Field, Tex., to special observation course in flying, Advanced Flying School, Kelly Field, Tex. (Oct. 7)

Hyndshaw, 1st Lt. Silas C., retired as incapacitated for active service. (Sept. 27)

Lawrence, 2d Lt. Charles W., from Brooks Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Liggett, 1st Lt. Arthur G., from Advanced Flying School, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Longenecker, 1st Lt. Ernest Abraham, Reserve, order of Sept. 2 revoked. (Oct. 4)

MacShort, 1st Lt., Reserve, order of Sept. 2 revoked. (Oct. 15)

Maxwell, 1st Lt. Warren A., from 40th School Squadron, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Metzger, 1st Lt. Samuel Sanford, Reserve, ordered to active duty for training; to report to procurement planning representative, San Francisco, Calif. (Sept. 28)

Miller, 1st Lt. Walter, from 40th School Squadron, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Murray, 2d Lt. Basil Duval, Reserve, order of Sept. 2 revoked. (Oct. 1)

Neubauer, Maj. Charles Martin, Reserve, order of Sept. 2 revoked. (Oct. 1)

Owens, 1st Lt. Ray L., from Brooks Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Parker, Maj. Victor Clark, Reserve, order of Sept. 2 revoked. (Sept. 21)

Pettis, 1st Lt. Edward Valentine, Reserve, ordered to report to active duty for training; to report to procurement planning representative, San Francisco, Calif. (Sept. 28)

Pietzrak, Capt. Kasmer Theodore, Reserve, order of Sept. 2 revoked. (Oct. 12)

Post, 1st Lt. Leo F., from 10th School Squadron, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Prosser, 1st Lt. Harvey W., from 40th School Squadron, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Rice, 1st Lt. George E., from 42nd School Squadron, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Robertson, Maj. George Hepburn, Reserve, to report to office of Assistant Secretary of War, Washington, D. C., for training in connection with procurement activities. (Oct. 15)

Schlatter, 2d Lt. David M., from 88th Observation Squadron, Brooks Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Strong, 1st Lt. Earle Roberts, Reserve, to active duty for training, to report to procurement planning representative at New York City. (Sept. 25)

Taylor, 1st Lt. James G., from 40th School Squadron, Kelly Field, Tex., to March Field, Riverside, Calif. (Sept. 22)

Theiss, Capt. Edgar Raymond, Reserve, to active duty for training, to report to procurement planning representative, Chicago, Ill. (Sept. 28)

Tyndall, 1st Lt. Frank B., leave of absence, 3 months, 10 days. (Sept. 26)

Wheeler, Maj. Lester M., Inf., detailed in Air Corps, relieved from Florida National Guard to Primary Flying School, Brooks Field, Tex. (Sept. 26)

NAVY AIR SERVICE ORDERS

THE following Navy air orders have been issued as of the dates indicated in brackets:

Alford, Lt. Comdr. Thabert N., temp. duty N. A. S., Nav. Oper. Base, Hampton Roads, Va. (Sept. 30)

Allen, Lt. James R. (C. C.), det. Nav. Air. Factory, Navy Yard, Philadelphia, Pa.; to N. A. S., Pensacola, Fla. (Sept. 30)

Alvis, Lt. John D., det. VO Sqn. 1 (U. S. S. Arizona), Aircraft Sqdns., Bat. Flt., to U. S. S. Texas. (Sept. 30)

Bernard, Comdr. Alvan D., det. N. A. S., Pensacola, Fla.; to temp. duty N. A. S., San Diego, Calif. (Oct. 5)

Bogan, Lt. Comdr. Gerald F., det. command VF Sqn. 1B, Aircraft Sqdns., Bat. Flt.; to command N. R. A. S., Sand Point, Seattle, Wash. (Sept. 29)

Brandenburger, Lt. Harry A., det. VO Sqn. 2B (U. S. S. Idaho), Aircraft Sqdns., Bat. Flt., to VO Sqn. 2B (U. S. S. New Mexico), Aircraft Sqdns., Bat. Flt. (Sept. 30)

Brix, Lt. Earl B., det. VO Sqn. 2B (U. S. S. Mississippi), Aircraft Sqdns., Bat. Flt.; to VO Sqn. 1B (U. S. S. California), Aircraft Sqdns., Bat. Flt. (Sept. 30)

Brow, Lt. Harold J., det. connection U. S. S. Lexington and U. S. S. Saratoga detachment, N. A. S., Hampton Roads, Va.; to c. f. o. U. S. S. Saratoga for duty when commissioned. (Sept. 20)

Caldwell, Ens. Earl S., det. U. S. S. Arkansas; to c. f. o. U. S. S. Saratoga. (Oct. 3)

Campman, Lt. Comdr. John H., det. command N. A. S., Sand Point, Seattle, Wash.; to command VT Sqn. 4B, Aircraft Sqdns., Bat. Flt. (Sept. 30)

Carter, Lt. Paul W., det. VO Sqn. 1B (U. S. S. West Virginia), Aircraft Sqdns., Bat. Flt.; to VO Sqn. 2B (U. S. S. West Virginia), Aircraft Sqdns., Bat. Flt. (Sept. 30)

Chandler, Lt. Comdr. Alfred W. (D. C.), det. Nav. Med. School, Washington, D. C.; to c. f. o. U. S. S. Saratoga. (Oct. 10)

Chourre, Lt. Emile, orders April 23, 1927, modified; to VF Sqn. 6B, Aircraft Sqdns., Bat. Flt. (Oct. 3)

Clark, Lt. Joseph J., det. VO Sqn. 2B (U. S. S. Mississippi), Aircraft Sqdns., Bat. Flt., to VO Sqn. 2B (U. S. S. Pennsylvania), Aircraft Sqdns., Bat. Flt. (Sept. 30)

Coatsworth, Lt. Caleb J., Jr., det. VO Sqn. 1B (U. S. S. Tennessee), Aircraft Sqdns., Bat. Flt., to VO Sqn. 1B (U. S. S. Mississippi), Aircraft Sqdns., Bat. Flt. (Sept. 30)

Comstock, Lt. Comdr., Lewis W., det. Naval Commun., Navy Dept., to c. f. o. U. S. S. Lexington. (Oct. 3)

Connell, Lt. Byron J., det. VO Sqn. 2B (U. S. S. Arizona), Aircraft Sqdns., Bat. Flt.; to VO Sqn. 2B (U. S. S. Pennsylvania), Aircraft Sqdns., Bat. Flt. (Sept. 30)

Curley, Lt. Comdr. Harry P., det. 7th Nav. Dist., Key West, Fla.; to N. A. S., Pensacola, Fla. (Sept. 30)

Curtin, Lt. Lawrence W., unexpired leave of absence revoked; det. Bu. Aero.; to VO Sqn. 5S, Aircraft Sqdns., Scr. Flt. (Sept. 30)

Dill, Lt. Comdr. George T. (M. C.), det. U. S. S. Langley; to U. S. S. Arctostook. (Oct. 10)

Eddy, Lt. Myron F., det. VO Sqn. 1B (U. S. S. Tennessee), Aircraft Sqdns., Bat. Flt.; to U. S. S. Arizona. (Sept. 29)

Finch, Lt. Volney C., orders April 23, 1927, modified; to VF Sqn. 1B, Aircraft Sqdns., Bat. Flt. (Oct. 3)

Fuller, Ens. Wallace H., det. U. S. S. Bridge; to c. f. o. U. S. S. Lexington. (Oct. 3)

Gillette, Comdr. Claude S., det. c. f. o. U. S. S. Lexington, to aide on staff, Aircraft Sqdns., Scr. Flt. (Oct. 15)

Graesser, Lt. (j. g.) Walter M., det. N. A. S., Lakehurst, N. J.; to U. S. S. Nokomis. (Oct. 5)

Harper, Lt. Cecil F., det. VO Sqn. 1B (U. S. S. Pennsylvania), Aircraft Sqdns., Bat. Flt., to U. S. S. Texas. (Oct. 15)

Hitchcock, Lt. Norman R., det. VO 1B Sqn. (U. S. S. Pennsylvania), Aircraft Sqdns., Bat. Flt., to VO Sqn. 2B (U. S. S. Maryland), Bat. Flt. (Sept. 30)

Hollingsworth, Lt. Wallace B., Jr., det. VO Sqn. 1B (U. S. S. Tennessee), Aircraft Sqdns., Bat. Flt., to VO Sqn. 1B (U. S. S. New Mexico), Aircraft Sqdns., Bat. Flt. (Sept. 30)

Hoover, Lt. Guy B., det. c. f. o. U. S. S. Saratoga to U. S. S. Patoka. (Oct. 10)

Howeth, Ens. Linwood S., det. (U. S. S. Preston) to duty c. f. o. U. S. S. Lexington. (Oct. 3)

Hughes, Lt. (j. g.) Francis M., det. N. A. S., Pensacola, Fla., to U. S. S. Hannibal. (Sept. 29)

Hundt, Lt. Lester D., to continue duty with VO Sqn. 5S, U. S. S. Nevada, Aircraft Sqdns., Scr. Flt. (Oct. 5)

Jasperson, Lt. Robert E., det. Office Naval Communications to c. f. o. U. S. S. Saratoga. (Oct. 5)

Johnston, Lt. (j. g.) Bates H., det. Office of Insp. of Nav. Aircraft, Buffalo, N. Y.; to N. A. S., San Diego, Calif. (Oct. 5)

Masters, Lt. James C., det. Aircraft Sqdns., Bat. Flt., to N. A. S., Coco Solo, C. Z. (Oct. 5)

McCord, Lt. Comdr. Frank C., det. N. A. S., Lakehurst, N. Y., to U. S. S. Langley. (Oct. 5)

McDonough, Lt. (j. g.) James F., det. VT Sqn. 2B, to VT Sqn. 9S, Aircraft Sqdns., Scr. Flt. (Sept. 30)

Mullinnix, Lt. Comdr. Henry M., det. Bu. Aero., to c. f. o. U. S. S. Saratoga. (Oct. 5)

Nester, Lt. (j. g.) John L., det. N. A. S., Pensacola, Fla., to U. S. S. McFarland. (Oct. 3)

Nicholson, Lt. Charles A. (C. C.), det. N. A. S., Pensacola, Fla., to N. A. S. Oper. Base, Hampton Roads, Va. (Sept. 29)

Robert, Ens. Lew W., det. N. A. S., Pensacola, Oper. to temp. duty 5th Nav. Dist. (Sept. 29)

Schoeffel, Lt. Malcolm F., det. V. T. Sqn. 4B, to V. T. Sqn. 2B, Aircraft Sqdns., Bat. Flt. (Oct. 8)

Slattery, Lt. William J., det. VT Sqn. 2B; to VT Sqn. 9S, Aircraft Sqdns., Scr. Flt. (Sept. 30)

Smith, Comdr. Karl F., det. Aircraft Sqdns., Bat. Flt., to N. A. S., San Diego, Calif. (Sept. 29)

Storrs, Lt. (j. g.) Aaron P., 3rd, det. VF Sqn. 6B, Aircraft Sqdns., Bat. Flt., to fighting plane unit U. S. S. Saratoga. (Sept. 2)

Thompson, Lt. Paul B., det. VO Sqn. 1B (U. S. S. Arizona), Aircraft Sqdns., Bat. Flt., to U. S. S. Pennsylvania. (Oct. 15)

Tillman, Lt. Edwin Hord, Jr., det. N. A. S., Nav. Oper. Base, Hampton Roads, Va., to U. S. S. Vestal. (Oct. 3)

Tuner, Comdr. Richmond K., det. N. A. S., Pensacola, Fla., to Asiatic Sta. (Oct. 5)

Van Auker, Comdr. Frederic T., det. c. f. o. U. S. S. Saratoga, to aide on staff, Aircraft Sqdns., Bat. Flt. (Oct. 15)

Whitmore, Lt. Frank R., det. U. S. S. S-1; to N. A. S., Coco Solo, C. Z. (Oct. 16)

AIR CORPS PERSONNEL FOR MARCH FIELD

NOW that March Field, Calif., is well on the way towards being rehabilitated it will be of interest to the service, especially to Air Corps personnel, to know what Air Corps officers are on duty there and what officers are under orders to join that station.

Those officers of the Air Corps now on duty at March Field are: Maj. Millard F. Harmon and Capt. Carlisle H. Wash. Capt. Lloyd N. Keesling, Rosenhahn, Ildal H. Edwards, Orlo H. Quinn, and Joseph H. Davidson, 1st Lieuts. Earle G. Huer, John B. Patrick, Ralph B. Walker, Alvan C. Kincaid, James L. Grisham, Earle H. Tonkin, Alfred Lindeburg, Donald G. Stitt, Homer B. Chandler, Carl W. Pyle, Cornelius J. Kenney, William L. Boyd, Younger A. Pitts, Bernard J. Toohar, Milo N. Clark, Rowland C. W. Blessley, Aubrey Hornsby, Nathan F. Twining, William B. Clarke, Hugh C. Minter, and Donald W. Norwood, and 2d Lieuts. William G. Plummer and Wallace E. Whitson.

Following is a list of Air Corps officers who are under orders to join March Field: Captain Byrne V. Baucorn, from Bolling Field, D. C.; 1st Lt. Frederick Von H. Kimble, Selfridge Field, Mich.; 1st Lt. Paul L. Williams, Langley Field, Va.; 1st Lt. Charles McK. Robinson, Fort Crockett, Texas; 1st Lt. John S. Cullett, Bolling Field, D. C.; 1st Lt. Arthur L. McCullough, Mitchell Field, N. Y.; 1st Lt. James M. Bevans, Marshall Field, Kansas; 1st Lt. John R. Glascock, Kelly Field, Texas; 1st Lt. Det. Schramm, Kelly Field, Texas; 1st Lt. Morton H. McKinnon, Brooks Field, Texas; 1st Lt. Leonard D. Wynderton, Fort Sam T. Noves, Texas; 1st Lt. Byron T. Burt, Jr., Langley Field, Va.; 1st Lt. Leo H. Dawson, Chanute Field, Ill.; 2nd Lt. Patrick W. Timberlake, Langley Field, Va.; 2nd Lt. Hoyt S. Vandenberg, Ft. Crockett, Texas; 2nd Lt. Walter C. White, Mitchell Field, N. Y.; 2nd Lt. James Hewins, Jr., Aberdeen Proving Grounds, Md.; 2nd Lt. Ralph E. Fisher, Marshall Field, Kansas; 2nd Lt. Edgar T. Noves, Fort Crockett, Texas; 2nd Lt. John H. Dulligan, Aberdeen Proving Grounds, Md.; 2nd Lt. Earl W. Barnes, Fort Crockett, Texas; 2nd Lt. Dixon M. Allison, Langley Field, Va.; 2nd Lt. George L. Murray, Bolling Field, D. C.; 2nd Lt. Wallace S. Dawson, Langley Field, Va.; 2nd Lt. George F. Henry, Crissy Field, Calif.

Wasp & Hornet Leadership

One piece Master Connecting
Rod and Built-up Crankshaft.



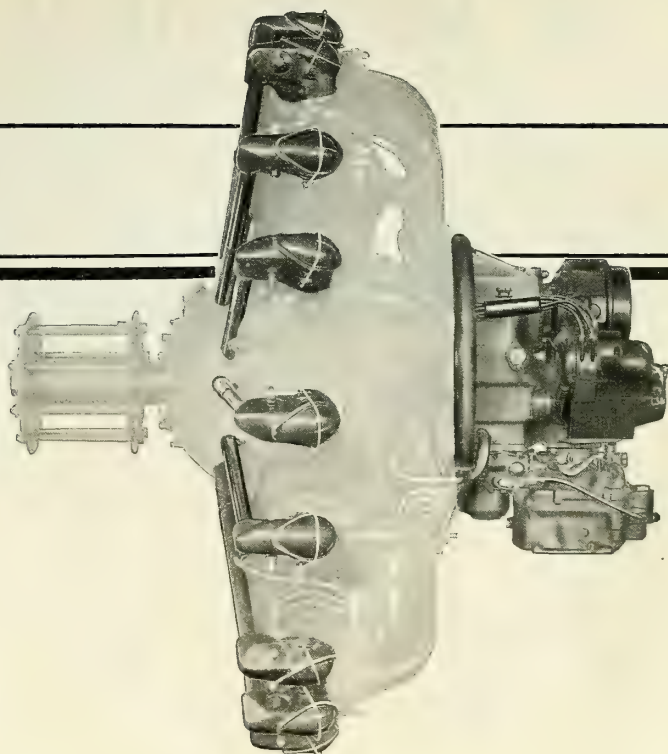
Divided and Forged Aluminum
Main Crankcase.



Grouping of all accessories at
the rear of the engine.



Complete enclosure of all work-
ing parts.



Complete enclosure of all working parts

The valve gear and push rod assemblies are completely enclosed but readily accessible for adjustment. The location of all the accessories at the rear permits these units to be enclosed within the cowl of the airplane. Thus all moving parts of "Wasp" and "Hornet" engines are entirely protected from dirt, as well as the elements, adding greatly to the life and dependability of the engine. At the same time the front of the engine is left free and clean for the most effective cowling arrangement.

The Wasp

425 H.P.
at 1900 R.P.M.
Weight 650 lbs.

The Hornet

525 H.P.
at 1900 R.P.M.
Weight 750 lbs.

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DEPENDABLE ENGINES

THE AERONAUTICAL INDUSTRY

BALTIMORE AIR NEWS

By EDWARD JOHNS

UNDoubtedly the worst weather that Charles A. Lindbergh has encountered on his tour of the country in the interest of aviation greeted him in Baltimore on October 18. But the fact that more than 20,000 persons braved a piercing cold and penetrating rain to cheer him was, also, a striking demonstration of public interest in him and his mission.

Fully twelve hours before the transoceanic flier was due to leave Washington, where he dined with the President, arctic winds from the northeast brought low-hung clouds and driving rain over all the Middle Atlantic Seaboard. Baltimore was afraid Lindbergh would not face the discomfort of elements so unruly, but assuring word from the aviator in the National Capitol said: "I will fly to Baltimore in spite of rain."

Shortly before 2 p.m. his plane roared under the 200-foot ceiling over the southern end of the city, then turned toward Logan Field, where the famous "We" landed. He was on scheduled time. Meantime the downtown streets became lined with people, wet, cold, miserable. But the word that ran up and down the long line, and brought smiles to dripping faces, was: "If Lindy can stand it we can." And they "stood it," though raincoats and umbrellas were no protection against the wind that whisked coats back and drove the rain on to shivering bodies underneath. Hardly a person in the 20,000 was not soaked to the skin in spite of rubbers, rubber coats and umbrellas.

Lindbergh appeared, seated high in an open automobile, hatless, a gesture of a smile flickering across his lips, dripping wet even under the yellow slicker he wore, and the crowd went wild. He rode through the downtown streets, then to the stadium, where an address was made. In the evening he made another speech at the Lyric Theatre, where a dinner was tendered in his honor.

At noon the following day, rain still pounding briskly down from wind-driven clouds, Baltimore bid him adieu. He and the *Spirit of St. Louis* winged swiftly northward through the rough weather toward Atlantic City. When he had gone Baltimore said: "No wonder he flew the Atlantic. No wonder aviation has advanced."

BALTIMORE has its eyes to the front in aviation. A site is being sought for a \$1,500,000 airport, funds for which were voted at the last election.

To all present indications the field will be on made ground along the banks of the Patapsco River, in the city limits and near the Hanover Street bridge. This location is strongly advocated by airmen, who point out its advantages there as giving it good approach, easy reach of the uptown district, four-way runways and accommodations for both land planes and seaplanes.

Lease on Logan Field, the present airport, will expire in two more years. To fill in the ground needed for the proposed field and time for the dredged earth to settle will require three years. The difference in time would leave the city without a flying field, unless the Bethlehem Steel Company, which owns the property, would allow a temporary extension of the lease.

THE AIRPLANE ON OUR COVER THIS MONTH

THE Vought Corsair which appears on our cover this month, is a two-place military plane adaptable for many types of work. It is quickly convertible for either land or water service, being used as a seaplane for reconnaissance after being catapulted from battleships or scout cruisers and as a two-place fighter. As a land plane it is equipped for deck landing on the aircraft carriers for observation and two-seater fighting work as well as for long

cross-country travel. The performance of the Corsair is outstanding, particularly at altitude where it is capable of outflying many of the present service type two-seater observation or single-seater fighters.

The Corsair, as a strictly stock airplane this year in rapid fire order brought back to the United States four world's seaplane records. The United States Navy Department has ordered a large number of these planes for the use of the Naval Air Service, and the first production units are already being delivered, the Vought Corporation having enlarged its organization and plant facilities to take care of rapidly increasing production requirements.

NATIONAL AERONAUTICS CONFERENCE CALLED

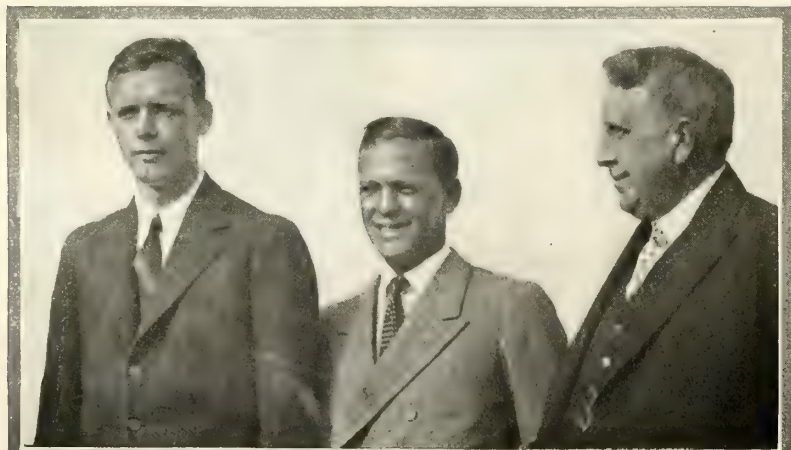
OUTSTANDING problems which confront the Government and the industry in the development and regulation of commercial aeronautics in the United States will be discussed at a general conference to be held in Washington, D. C., beginning December 5.

Representatives of every branch of aerial activity, including manufacturers of aircraft engines and accessories, air transport and service operators, airport managers and engineers, members of the faculties of schools of aeronautics, insurance underwriters, state and municipal officials, and editors and publishers of aeronautical journals will be invited to attend.

The primary purpose in assembling such a representative group, Assistant Secretary MacCracken points out, is to follow out the Department of Commerce's policy of seeking to ascertain from those most interested and best qualified opinions as to what the Federal Government can and should do in the best interests of the public and the aeronautical industry.

Conference discussions which are expected to extend over five days will be centered around five main topics:

1. Air Commerce Regulations—changes and amendments.
2. Aviation Schools—management, equipment, courses to be given—standardization.
3. Airports—rating of—under Air Commerce Act. Management and administration. Standard field rules—safety measures in ground operations. City and county participation in control of local activities.
4. Department Services—landing field bulletins. Airways maps. Aids to air navigation on airways, including equipment, weather reports, radio service, etc. News bulletins—trade promotion.
5. Other Services—Performance tests of commercial aircraft. Performance tests of engines, propellers, instruments and other aircraft equipment. Miscellaneous items of interest that conference may develop.



Colonel Charles A. Lindbergh, Edward Hattrick, president of the Metro-Goldwyn-Mayer News Weekly and William Randolph Hearst, famous newspaper publisher.



WACO Made the Most Exceptional Record of any Ship on the Field At Spokane Races

*Final figures show that Waco took six places, including first
in the New York-Spokane Class B Race*

The popularity that WACO has had among the air-wise is now even greater than before — its achievements recorded in Spokane are a great tribute to the engineers who have built into it the experience of their ten years

of airplane construction.

The WACO ships which made the most exceptional record of any on the field were strictly stock models — not built especially for this event.

Our distributor organization stretching into every part of the country is waiting to show the WACO TEN—today's acknowledged leader in the commercial field. Ask us for his name.



MANUFACTURED BY ADVANCE AIRCRAFT CO., TROY, OHIO

THE AIRPLANE MODEL LEAGUE OF AMERICA



YOUNG air enthusiasts—grade and high school students interested in building model airplanes that actually fly, or who wish to keep in close touch with the general field of aviation—now have a national organization all their own, headed by Commander Richard E. Byrd of polar and transatlantic flight fame. The name of the new organization is "The Airplane Model League of America." It has its headquarters in The American Building, corner Second and Lafayette Boulevards, Detroit, Michigan.

Thousands of students, every week, are enrolling in the activities of the league, which include the building of indoor and outdoor model planes, the staging of local flying exhibitions and contests, and the competing next June in a national contest, with a chance at trophies, trips to Europe, \$2,000 in cash prizes, and certificates of excellence.

The league is sponsored by *The American Boy* magazine, whose October issue carries the full directions for building the baby R.O.G. (rise off the ground) plane—a light craft with a 12-inch wing spread that performs astonishingly well and is easy to build.

Among the officers of the league are: Commander Byrd, honorary president, and William B. Stout, general manager of the Ford airplane interests, president. Vice-presidents are Eddie Stinson, head of the Stinson Aircraft Corporation; Major Thomas G. Lanphier, commandant of Selfridge Field; Thomson Burtis, flier and author; and Griffith Ogden Ellis, editor of *The American Boy*.

"Building model planes," says Commander Richard E. Byrd, "is more than an entertaining hobby. It is the first step in learning the principles of aeronautics. The boy who constructs models is not only having a good time, but he is acquiring an enthusiasm for the air that will do much to guarantee the progress of aviation in the United States."

Merrill Hamburg, secretary of the league, is a model expert who has supervised the building of small planes that have broken world's records for duration in the air. His students, in Detroit public schools, hold both the national indoor and outdoor titles. He will tell members of the league, in a series of articles in *The American Boy*, how to build the indoor tractors and pushers, the big outdoor types with two propellers, and many different kinds of scale models.

The Airplane Model League is strictly an educational, non-profit organization. It charges no dues or assessments. A boy may join merely by sending a two cent stamp to Merrill Hamburg, at the League's headquarters, corner Second and Lafayette Boulevards, Detroit. Membership entitles the boy to a free membership card and button. It makes him eligible to use the league's free question and answer service covering all phases of model plane building, and aviation

in general. It gives him the privilege of buying from the league, at cost, the necessary materials for building models, such as balsa wood, the wood that is lighter than cork; Japanese Imperial tissue, the light strong paper for the wing and tail surfaces; ambroid cement, banana oil, piano wire, metal fittings, and other materials that most boys have difficulty in securing by themselves.

Membership permits the boy to enter the national contests to be held in Detroit, next June—the outdoor contest for the Mulvihill trophy, and the indoor contest for the Stout trophy.

HALF-YEAR EXPORTS OF PLANES AND PARTS

EXPORTS of complete aircraft, i.e., airplanes, seaplanes and other aircraft, decreased in number from 26 units to 19 units but increased in value from \$123,941 to \$311,610 during the first six months of 1927 over the same period of 1926. The significance of these figures lies in the fact that the unit value increased from \$4,729 to \$16,400 each showing that our exports of aircraft for the first time since the post war period consisted largely of modern up-to-date planes of new production and modern design.

This is borne out by the following table prepared by the Automotive Division, Bureau of Foreign and Domestic Commerce, showing these exports by units and countries and also shows that with three exceptions all our new aircraft was exported to Latin American countries.

Exports of Airplanes, Seaplanes, and other aircraft from the United States during first six months of 1927

Country of Destination	Number	Value
Chile	7	187,500
Canada	3	5,845
Belgium	2	28,000
Japan	1	33,500
Colombia	1	27,305
Brazil	1	16,239
Argentina	1	8,875
Australia	1	3,421
Spain	1	850
Netherlands	1	75
Total	19	311,610

Exports of Aircraft Engines

Comparative figures on the total exports of aircraft engines show a decline in both number and value in 1927 as contrasted with the first six months of 1926. (See table following.) Here again the picture is not discouraging as with only a few exceptions the table shows that exports of aircraft engines consisted of many new engines of relatively high unit value. The wide extent of the distribution of these exports would also indicate that a great many of these were experimental orders. The low unit value of \$1,795 in 1927 is accounted for by the fact that 53 engines, with an average unit value of \$456, were exported to Canada, while the balance of 16 engines exported had an average valuation of \$6,233 each.

Parts for aircraft engines not being separately classified in export statistics cannot be shown here.

Exports of engines for aircraft from the U. S. during first six months of 1927

Country of Destination	Number	Value
Canada	53	24,163
Belgium	2	28,103
Mexico	2	21,088
Japan	2	19,000
Germany	2	2,328
Switzerland	1	10,000
Argentina	1	5,016
Czechoslovakia	1	4,610
Poland & Danzig	1	4,260
Spain	1	4,100
British South Africa	1	790
British Malaya	1	409
Australia	1	25
Total	69	123,892

Exports of Aircraft Parts Except Tires

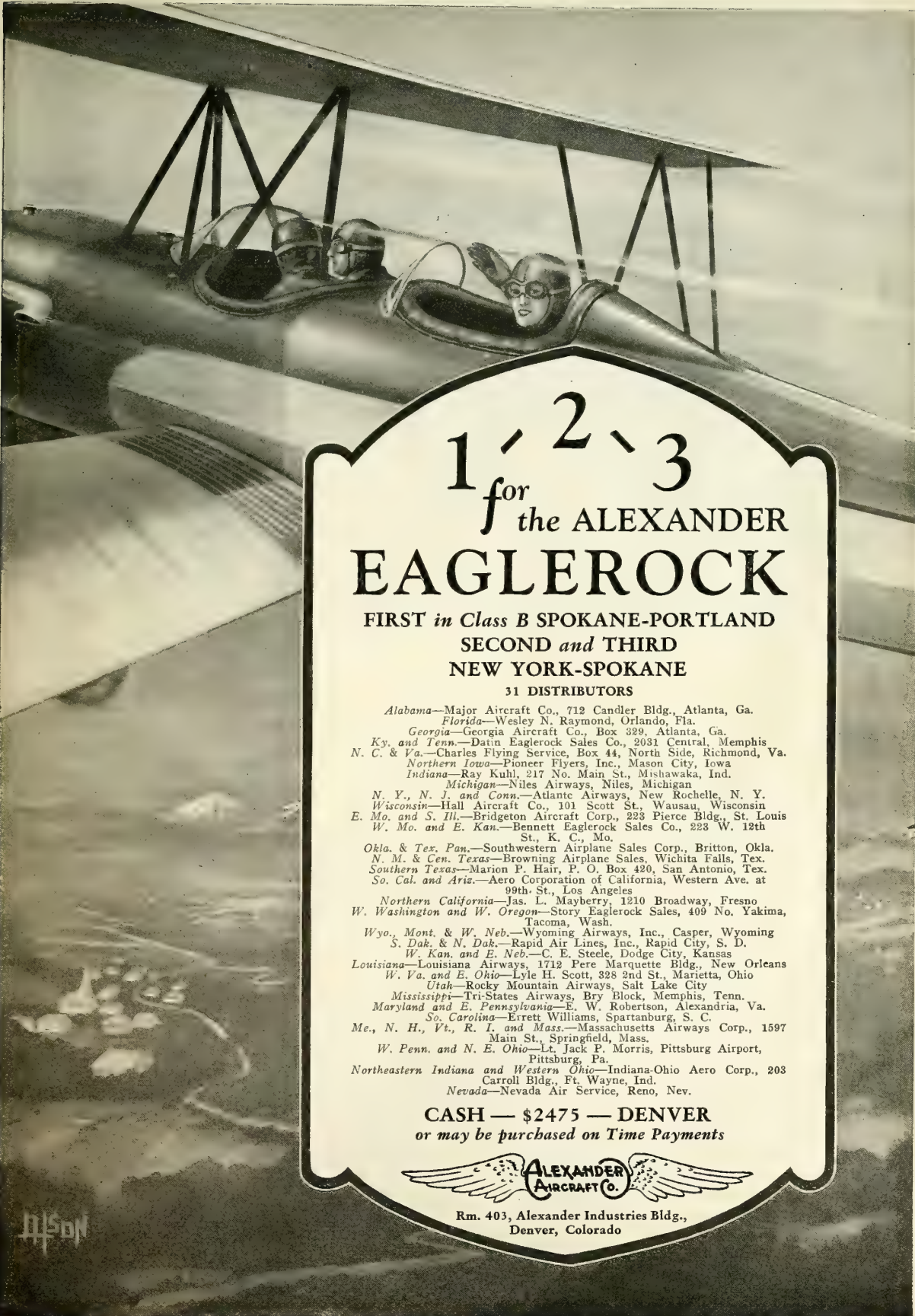
The export value of aircraft parts during the first six months of 1927 were almost 100 per cent higher than during the same period of 1926. One-third of the total during the present year have gone to Canada, showing in a marked degree the extent of use of American planes in the Dominion. It is also interesting to note that parts exports to Canada during the first six months of the current year far exceeded the total exports of aircraft, engines and parts during the whole year of 1926. Soviet Russia in Europe and the United Kingdom also loomed up relatively large as export markets for aircraft parts during the present year, as did Chile in the western hemisphere.

Exports of parts of aircraft from the U. S. during first six months of 1927

Country of Destination	Value
Canada	\$63,731
Soviet Russia in Europe	36,103
Chile	34,878
United Kingdom	30,054
Cuba	6,776
Dominican Republic	2,800
Mexico	4,669
Brazil	1,660
Peru	1,479
Argentina	1,419
Germany	1,209
Java and Madura	1,040
Italy	900
France	645
Newfoundland	503
Philippine Islands	427
Australia	400
Other British West Indies	192
Colombia	148
Other Dutch East Indies	75
Czechoslovakia	70
Total	189,178

U. S. TO CUBA AIR MAIL

A CONTRACT air mail route, F. M. 4, to expedite foreign mail from Key West to Havana, was established on October 19. The contract is held by the Pan-American Airways, Inc. First class mail reaching Key West, Florida, for Cuba will be carried.



1-2-3 for the ALEXANDER EAGLEROCK

FIRST in Class B SPOKANE-PORTLAND
SECOND and THIRD
NEW YORK-SPOKANE

31 DISTRIBUTORS

Alabama—Major Aircraft Co., 712 Candler Bldg., Atlanta, Ga.
Florida—Wesley N. Raymond, Orlando, Fla.
Georgia—Georgia Aircraft Co., Box 329, Atlanta, Ga.
Ky. and Tenn.—Datin Eaglerock Sales Co., 2031 Central, Memphis
N. C. & Va.—Charles Flying Service, Box 44, North Side, Richmond, Va.
Northern Iowa—Pioneer Flyers, Inc., Mason City, Iowa
Indiana—Ray Kuhl, 217 No. Main St., Mishawaka, Ind.
Michigan—Niles Airways, Niles, Michigan
N. Y., N. J. and Conn.—Atlantic Airways, New Rochelle, N. Y.
Wisconsin—Hall Aircraft Co., 101 Scott St., Wausau, Wisconsin
E. Mo. and S. Ill.—Bridgeton Aircraft Corp., 223 Pierce Bldg., St. Louis
W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 223 W. 12th St., K. C., Mo.
Okla. & Tex. Pan.—Southwestern Airplane Sales Corp., Britton, Okla.
N. M. & Cen. Texas—Browning Airplane Sales, Wichita Falls, Tex.
Southern Texas—Marion P. Hair, P. O. Box 420, San Antonio, Tex.
So. Cal. and Ariz.—Aero Corporation of California, Western Ave. at 99th St., Los Angeles
Northern California—Jas. L. Mayberry, 1210 Broadway, Fresno
W. Washington and W. Oregon—Story Eaglerock Sales, 409 No. Yakima, Tacoma, Wash.
Wyo., Mont. & W. Neb.—Wyoming Airways, Inc., Casper, Wyoming
S. Dak. & N. Dak.—Rapid Air Lines, Inc., Rapid City, S. D.
W. Kan. and E. Neb.—C. E. Steele, Dodge City, Kansas
Louisiana—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
W. Va. and E. Ohio—Lyle H. Scott, 328 2nd St., Marietta, Ohio
Utah—Rocky Mountain Airways, Salt Lake City
Mississippi—Tri-States Airways, Bry Block, Memphis, Tenn.
Maryland and E. Pennsylvania—E. W. Robertson, Alexandria, Va.
So. Carolina—Errett Williams, Spartanburg, S. C.
Me., N. H., Vt., R. I. and Mass.—Massachusetts Airways Corp., 1597 Main St., Springfield, Mass.
W. Penn. and N. E. Ohio—Lt. Jack P. Morris, Pittsburg Airport, Pittsburg, Pa.
Northeastern Indiana and Western Ohio—Indiana-Ohio Aero Corp., 203 Carroll Bldg., Ft. Wayne, Ind.
Nevada—Nevada Air Service, Reno, Nev.

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Rm. 403, Alexander Industries Bldg.,
Denver, Colorado

PENNSYLVANIA NOTES

By RAY KRIMM

J. SANFORD SALTUS, jr., of Philadelphia, was elected president of the Pennsylvania Aeronautical Association at an organization meeting held at Berwick, Pa., late in October. The association is the first of its kind in the United States.

The Berwick Aeronautical Association and the Lancaster Aeronautical Association were the first bodies to join the organization. Plans were laid to enlist the support of flying organizations throughout Pennsylvania for the advancement of aviation in general. At the meeting, held under auspices of the Berwick Association, Mr. Saltus was authorized to outline plans for a permanent organization which will compile aviation data for fliers throughout the state.

Those attending the meeting included George Rutledge, of West Pittston; Hyman Winterstein, of Berwick; William Veal, of Hazleton; Jack Ashcraft and Buck Steel, of Towanda; J. P. Jones, of Lancaster; Lloyd Yost, of Conyngham; Henry Noll, of Pleasant Gap; J. M. Cooper and C. W. Hunter, of Millersburg; R. D. Whipple, of Chicago; G. A. Newman, of Moscow; J. Sanford Saltus and Robert P. Hewitt, of Philadelphia; Fred Nelson, of Middletown, and officials of the Berwick and Reading Chambers of Commerce.

LOCATED within five miles of City Hall, Philadelphia's new airport was dedicated October 22 by Colonel Charles A. Lindbergh. Leased from the city for ten years by the Ludington Philadelphia Flying Service, the Philadelphia Airport is one of the most accessible flying fields in the country, a recent survey revealed.

A week prior to the Lindbergh visit, the field was opened and inspected by 30,000 residents. Commander Ralph D. Weyerbacher, commander of the Naval Aircraft Factory, Philadelphia Navy Yard; Major J. Sydney Owens, commander of the 103rd Observation Squadron, Pennsylvania National Guard; City Statistician Thomas W. Davis, Charles Townsend Ludington, president of the company bearing his name, and other city and aviation officials participated. Aircraft of the Ludington company, the National Guard and the Marine depot at Quantico, Va., took part in the ceremonies and flew over a parade of 3,000 Civil, Spanish-American and World War veterans and school children.

The airport is becoming increasingly popular, flight records show. When the Ludington company began operations June 1 only a straggling pilot or fliers of the 103rd Observation Squadron used the field. To-day the field attracts more than 200 visiting and local pilots each week. In the two large hangars, the aerial garage, the machine shop and the elaborate lighting equipment, the Ludington interests have invested \$115,000 to give the city an adequate flying field. The field, however, is regarded as too small for the increasing traffic.

The airport has a runway of 3,800 feet and is 1,800 feet at its widest point. It covers 111 acres, but an additional 90 acres

are available from adjoining city property. The city's new administration, taking office January 1, is expected to provide for the airport's expansion.

A PLANE with a 25-foot wing spread and capable of taking-off within 60 feet has been produced by the Ludington Philadelphia Flying Service, lessee of the Philadelphia Airport, and sold to Colonel Clarence Chamberlin, New York to Germany flier. Testing the craft at the Philadelphia Airport, late in October, Chamberlin piloted the plane to a 60-foot take-off and landed it with a roll of only 75 feet.

The new plane weighs only 500 pounds and has a Henri Farman undercarriage which checks the speed on landing and upends the nose of the ship on taking-off at the will of the pilot. Its wing spread is 25 feet and one of its outstanding features is the fact that the areas of its control surfaces can be increased while the craft is in flight, increasing the controllability at slow speeds. It has a 5-cylinder air-cooled Siemens engine which is described in detail elsewhere in this issue of AERO DIGEST.

"The Government requirements for an A-A field provide for 2,500-foot runways," Chamberlin said, "but such long take-offs will not be necessary when this type of plane becomes popular. Small landing fields can be established closer to the heart of cities, instead of being isolated on the outskirts of a city or out in the suburbs.

"On the first test of this new plane, the ship lifted after a run of 60 feet and landed after a roll of 75 feet. I am positive that this record can be bettered—how much, I am not prepared to say just now. The new records, however, will be considerably shorter than the two I made at the Philadelphia Airport."

During his travels, Chamberlin explained, he has found many admirable safety devices on various planes. His idea, he said, is to

incorporate many of these devices in the plane he is now experimenting with.

"With such safety devices I hope to produce a 'fool proof' plane that will live up to its name," he said. "I see no good reason why it cannot be accomplished."

A SPECIAL committee of the recently appointed State Aeronautics Commission of Pennsylvania is drafting rules and regulations that will govern aviation within the state.

On the committee are Howard Rigby, of Harrisburg; Edgar N. Gott, of Bristol, and Hollinshead N. Taylor, chairman of the Aviation Committee of the Philadelphia Chamber of Commerce.

"Gypsy fliers" and "planes fit only for the junk pile" are to be eliminated from the state's aviation development, according to the committee. The commission has the power to license pilots, license airports within the state, and revoke such licenses for violations of the state regulations.

The Commission's headquarters have been established at the State Capitol at Harrisburg, with Robert M. Ginter, of Pittsburgh, recently named secretary of the Commission, in charge. Mr. Ginter has been instructed by the Commissioners to compile all available data on Federal regulation of pilots and planes and submit this information at the next meeting of the Commission. At that time the special committee's report on regulations also will be received and rules adopted.

Other members of the Commission, which was recently appointed by Governor Fisher, are: James F. Woodward, Secretary of Internal Affairs; Major Charles J. Biddle of Philadelphia; W. D. B. Ainey, chairman of the Public Service Commission of Pennsylvania, and Major J. Sydney Owens of Philadelphia, commander of the 103rd Observation Squadron, twenty-eighth Division Air Service, Pennsylvania National Guard.

F. A. I. RULING ON NEW AIR RECORDS

AT a meeting on August 17th of the Federation Aeronautique Internationale, it was decided that new air records in the future will be recognized only when existing ones are exceeded by a greater margin than formerly.

AIR MAIL BIDS ASKED

PROPOSALS have been invited for the transportation of air mail under contract over the following route: *Atlanta, Ga. via Jacksonville to Miami, Fla., and return.* Distance each way approximately 595 miles.

Bids will be received at the Post Office Department in Washington until 12 o'clock noon, November 19, 1927.

BIDS will also be received at the Post Office Department for the operation of a contract air mail route between *Salt Lake City, Utah, and Great Falls, Montana, via Pocatello, Idaho, Butte and Helena, Montana.* The distance between the two cities is 476 miles and flying will be done in daylight.



P. & A. Photos.

Clarence D. Chamberlin and his new quick-rising slow-landing light airplane.

STEARMAN HAS PIONEERED

but not at the expense of the flying public



A LANDING gear of exceptionally wide tread and clearance with wheel brakes and the **STEARMAN RUBBER-DRAULIC** shock absorbing struts—landing and taxiing qualities of enviable perfection are displayed.

*Stearman is first again in introducing
an approved type of landing gear.*

THE STEARMAN AIRCRAFT COMPANY
Wichita, Kansas

ST. LOUIS AIR NEWS

ONE of the pilots of the Robertson Aircraft Co. of St. Louis, who are operating the contract air mail route between St. Louis and Chicago, made a record run between the two points when he covered the 278 miles in one hour and fifty minutes.

Pictures of the tornado, which luckily missed the flying field, were sent by air from St. Louis to Cleveland in five hours.

World Series pictures for Paramount were rushed from Pittsburgh to Chicago in one of the Robertson ships piloted by Harlan Gurney.

THE city of St. Louis is planning on the purchase of the Lambert-St. Louis Flying Field, the tract of land located about seven miles from the city limits and thirteen miles to the Post Office, on which the Robertson Aircraft Co. and other commercial aviation organizations are located.

The plan that has been recommended to the Municipal Airport Plan and Scope Committee by its sub-committee on finance is as follows:

The cost of purchasing the 160-acre site is \$286,000 while intended improvements of \$414,000 will mean a necessary expenditure of \$700,000, which amount should be raised by a bond issue authorized during the November election in 1928.

In the meantime A. B. Lambert has offered to rent this field to the city for the nominal sum of one dollar per year until the proposed bond issue is passed and suggests that public spirited citizens raise \$23,000 to perfect an option on the remaining 276 acres.

This sum will be applied as first payment on the purchase price and will be refunded to the guarantors if the bond issue is approved, otherwise this amount of \$23,000 becomes a loss to the guarantors.

An estimate of \$5,000 has been made as being sufficient for yearly maintenance, which sum would be under the supervision of the Park Department and no doubt made available by an ordinance passed by the Board of Aldermen of St. Louis.

OHIO AIR NEWS

By T. E. LUNSFORD

TWO men who were on opposite sides of the trenches in 1918 are cooperating in a campaign to increase membership in the Columbus Aero Club and boom interest in an airport for Columbus. They are Captain Ralph C. Williams and Lieutenant Sedelmaier. Captain Williams, formerly of the U. S. Infantry, is chairman of the Aero Club Membership Committee, and Lieutenant Sedelmaier, former officer in the German flying corps, is a member of the committee. Membership in the Columbus Club is steadily increasing.

MODEL airplane building will be one of the big activities in the manual training departments of the Columbus schools during the coming year. Certificates of merit will be awarded to the boys who build model planes that will fly a required distance. These certificates will be awarded by the Columbus Citizen Model Airplane Club. Manual training teachers will be aided in teaching the boys to build the planes by the officials of the club.

The first degree in the Model Airplane Club is that of "Pilot." A handsomely engraved certificate will be issued to the model makers who complete the test of this degree. The next degree is "Ace," which requires higher skill. Plans for the construction of scientific and commercial model airplanes are furnished free by the Model Airplane Club.

THE Business Men's Association of Coshocton is sponsoring a movement for the development of an aviation field for the use of commercial and other pilots.

Operation of a super-airport between Lorain and Elyria, with the cooperation of the two cities, the federal government and Lorain County commissioners, is the aim of the municipal airport committee of 18 under the leadership of E. W. Bell, president of the Central Business Men's Association.

KANSAS CITY NEWS

KANSAS CITY is at work on a new field that will meet the present desire of being near the center of the business district as well as being easy to reach. It is located north of the city. Two large hangars have been erected, one of which will be used by the National Air Transport, Inc. Runways have been laid out, and this new municipal field is rapidly acquiring the appearance of organized efforts.

The old Richards Field is approximately eleven miles southeast of the center of town and is being run by the Bennett Eaglerock Sales Co. They have built a 5-place Hisso motored ship that is being used for cross-country work and has been in service as an ambulance.

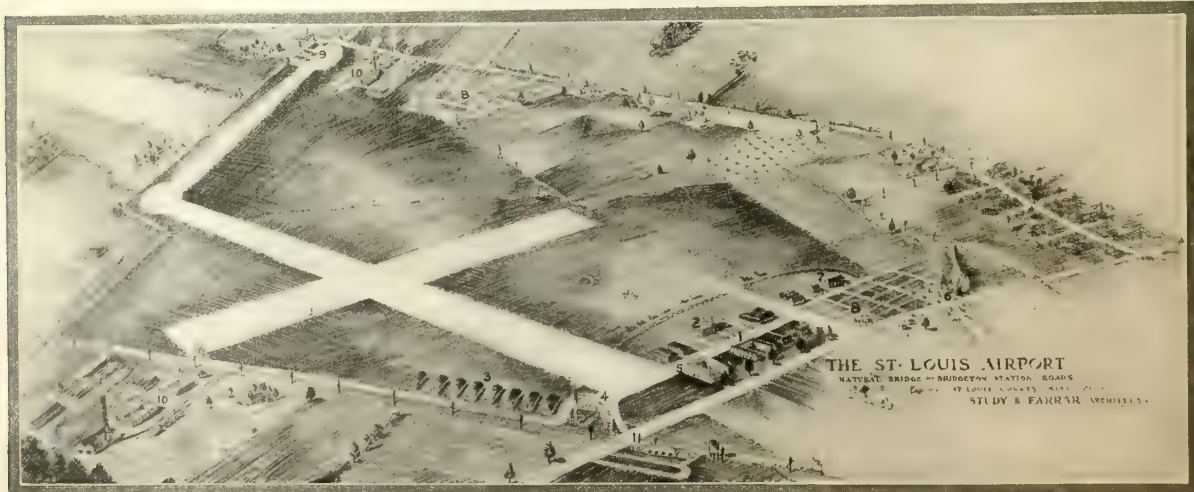
The American Eagle, which is manufactured in town, is brought out to the field to be set up and flight tested. Four or five ships are usually completed each week.

There are no lights for night flying at the old field, but the new municipal airport will not be lacking in such up-to-date requirements.

ASHEVILLE AIRPORT

ASHEVILLE, North Carolina, is establishing an airport under the greatest geographical difficulties. The mountainous section of North Carolina presents great problems to the aeronautical engineer. Here are the highest mountains in eastern America and the broken contours of the land in this section do not lend themselves well to the construction of a level field with proper length of runways.

Asheville, however, is located fortunately upon a table land 2,300 feet above sea level and although the surface of this great plateau is somewhat rolling and serrated with ridges, there are a number of valleys which permit of the establishment of a landing field. In a secluded valley not far from the city a number of level stretches of land have been located which with proper grading will be easily convertible into an airport.



The revised enlargement of the present Lambert-St. Louis Field proposed by A. B. Lambert.

Key—(1) Administration Building; (2) Meteorological Air Control Station; (3) Hangars; (4) Machine Shop and Power House; (5) Air Service Station; (6) Street Car Loop and Terminal; (7) First Aid Station; (8) Parking; (9) Air Mail and Air Depot; (10) Industrial District; (11) Wabash R.R. Depot.

Standard J 1 airplanes—

completely rebuilt and recovered with
factory rebuilt OX5 engines, set up, test
flown, and ready for fly-away delivery . .

\$1000

Standard J 1 airplanes—

with guaranteed overhauled Hisso Model
"A" motors

\$1500

De Havilland Air Mail planes—

with Liberty "12" motors . . . **\$2500**
to **\$5000**

Douglas Air Mail planes—

with Liberty "12" motors . . . **\$5500**
(for a limited time only)

Orioles—3-place

with 180 h.p. Hispano motors
wonderful performance . . . **\$1500**

1150 Factory rebuilt OX5 engines . . . \$350
Government overhauled OX5 engines . . . \$250

LEARN TO FLY \$100.00

OLDEST AND LARGEST FLYING SCHOOL IN THE
COUNTRY

THE NINTH YEAR OF OUR SCHOOL

WRITE FOR NEW FREE CATALOGUE

ROBERTSON AIRCRAFT CORPORATION
St. Louis Flying Field Anglum, Missouri

BOSTON AIR NEWS

By G. W. HAMBLIN

THE newest addition to Boston's list of aviation companies is the Silver Falcon Air Service, which has been founded by George Garrett and George Luce. Capt. E. W. Brewer has been retained as chief pilot, and Gilbert Thomlinson as a pilot. The company owns, at present, a five-place Martinsyde and expects delivery on a Waco-10 in two weeks. Twenty-five students have been signed up for the flying school, and the boys inaugurated a new wrinkle in flying hereabout by advertising joy hops at two and a half cents per pound.

This makes four companies in Boston that are paying their way by purveying flying, and AERO DIGEST wishes The Silver Falcon Air Service the best of luck.

THIS is the story of the Travel Air *Miss Boston* owned by the Boston Airport Corp., A Lewis MacClain, the pilot of the ship, a fire, and the renunciation of bachelorhood by MacClain for a sweet girl way out in the State of Washington. 'Tis a sad story, mates, so pass around the shaker, light up a smoke, and prepare for a yarn that is a yarn.

A. Lewis MacClain, holder of three degrees from various universities, was selected by Dan Sayer, who was then president of the Boston Airport Corp. to be pilot on the Corp.'s payroll and to assume the duties of student instructor of the flying school. Mac was handed the *Miss Boston*, commonly known at the airport as the Brown ship, and told to do his stuff. Mac did, and did it well, too. Then the "girl he left behind him" decided that she'd like to take the name of MacClain for the rest of her mortal life, and told Mac so in a long letter, by air mail. Mac emitted a whoop of joy, and with determination in his eye, climbed in a DH with Capt. H. N. Heisen, commander of the Army at the airport, who was going out to Frisco, and dashed off to his lady-love.

Different pilots flew the Brown ship during the first week of Mac's absence. But the loneliness for her own pilot proved too much for *Miss Boston*. After having told B. F. Billings in so many words that she wanted Mac to fly her, and Mac alone, and Billings being unable to help her, she just pined away to a ton, and adopted drastic measures to get service. She refused to rev up. She got out of line. She flew tail heavy. She flew nose heavy. She didn't fly at all, and still her master didn't come back. Then with a final wail of despair, she collected all the little Static children to her bosom, and after she had been gassed, released all the little Static Electricity kiddies, and just burned herself up! At the inquest, the coroner said it was premeditated suicide. So, Mac, while you're honeymooning way out there on the beautiful Pacific, cast a glance up at the fleeting shadow that passed over the face of the sun on that October morning and see the ghost of *Miss Boston*—may she rest in peace!

NOW that the obituary notice is out of the way, let's get on with the month's gnus. The Bay State Air Service, under the management of Fred Pereira, announces

that an office will be built at the airport during the coming week, and by the time this comes out in print, Al Backstrom, Fred's chief pilot, will have a place where he can park his "dogs" on a desk, and recline at ease in a swivel chair. Fred says business is as good now as it was all summer, and is hinting at a five-place cabin job for next spring.

B. F. BILLINGS, manager of operations for the Boston Airport Corp., and his cohorts, Messrs. O'Toole, Wickford, Barry, et al, are continuing on their non-stop flight of expansion, having built a repair-machine shop on the north side of the corporation's hangar. With this, the work will go along much smoother, and better service will be given the various plane owners at the port.

A plane has been kept busy all month taking pictures for Fairchild, for which Air Service of New England and the Corp. are New England agents. Billings and Stiles, the latter being chief photographer for the corporation, spent several days in Burlington, Vermont, making a strip of shots.

Billings reports that the taxi business is up to snuff, and has the Stinson booked up weeks in advance for hops. The longest hop of the month was to Chicago.

FRANKLIN COLLIER, creator of "Otto Grow" has turned his offices in the *Boston American* into an aviation clubroom. He has a prop hanging on the wall, and all visiting fliers are invited to inscribe their names thereon. The rest of the walls are devoted to pictures of various scenes. While on the subject of Collier, his brainchild's plane, "May Go" is grounded as being unfit for flying, since Otto's wif, May, demanded that he return the twins' carriage. Otto had been using the buggy for fuselage, and without a fuselage, State Inspector Bob O'Brien refused to grant a certificate of air-worthiness. Therefore Otto must resign his ship.



Muriel C. Hillman, daughter of Maj. Hillman, Sec'y of Springfield Chamber of Commerce, and Lt. Richard D. (Dick) Cobb of the Boston Airport.

WHILE flying from Hartford to Boston on the last leg of his 18,000 mile cross-country tour, Eddie Stinson and his party composed of Mrs. Stinson, Philip Ashley, J. T. Whitaker, Fred Koehler and Baron Barnekow, were forced down in Sherborn by a storm and had the entire force at the Boston Airport out looking for him all night, as well as every available State patrolman, and the policemen of Natick, Framingham and surrounding towns. Eddie declared that he didn't know there was anybody at the airport here awaiting him, so he and his party had a hearty meal at a farmhouse of Mr. Mann of Sherborn, motored to Framingham and there took a train to Boston, where they checked in at the Statler little dreaming what was going on all over the State. When Eddie awoke the next morning he found the Airport in an uproar, and everybody cock-eyed for want of sleep. He took his ship off, with his companions, for New York state during the afternoon. The boys at the port were pretty low all day, due to the nerve strain of wondering what had become of Stinson. However, all's well that ends well.

BOSTON AERO SHOW

WITH a list of entries that covered the whole field of aviation, and a hall large enough to exhibit them to full advantage, Daniel Rochford, aviation officer of the *Boston Evening Transcript*, displayed to the visiting hordes the modern airplane, the "ancient" airplane, the modern aircraft engines, parachutes, airlines, airports, et cetera, in a way that appealed to every one of the one hundred thousand people that visited Mechanics Building during the week of September 26.

One cannot pick out a specific entry as being the most interesting, because the various booths and floor areas were so well filled that it would be impossible to call any one the best in the show. For instance, the Army had a Jenny skeleton, that is, a Jenny with all the covering removed, and right next to it, the "Last of the Jennies," all set up, for the last time, and, as a comparison, a Consolidated P-T. The Navy had two Voughts, one belonging to Admiral Moffatt, and also a little submarine plane.

Commander Byrd's North Pole flight instruments had a booth all to themselves, and one of his Paris flight Whirlwinds had a place all its own in the middle of the floor. Wright Aeronautical Corp. had a new J-5 Whirlwind on display, and Pratt and Whitney showed both their Wasp and Hornet.

The Boston Airport Corp. had three ships in the show—a Stinson-Detroiter, William "Down Wind" Eaton's K-6 Travel Air and the combine, Charlie Hill and Otto Grow's "May Go" (Copyright Franklin Collier).

The Waco-10 was demonstrated by the Dennison Aircraft Corp. of Atlantic, Mass.

August Pabst and W. Nelson Bump displayed the Harvard Flying Club's new Travel Air.

Colonial Air Transport was among those present, with Sumner Sewell, Boston traffic manager, in charge, and a mail box in the

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booth, and succeeded in selling the air mail to countless hundreds.

The Silver Falcon Air Service had their Martinsyde and scales, where prospective customers weighed in, and were charged two and a half cents per pound for a flight ticket.

Friday night the mechanics of the Boston Airport Corp. descended upon the show with a Whirlwind motor, which they proceeded to install in the Stinson. AERO DIGEST's booth, which was next to the Stinson, and between the Harvard Club's ship and Bill Eaton's Travel Air, was almost swamped during this operation. However, no damage was done, and the Whirlwind was hooked up in fast time.

James P. "Whit" Whittall, of Worcester had one of the cleverest and most instructive booths in the show. He had a model airport with miniature planes, built to scale, hangars, flood lights, beacons and boundary lights, and modestly admitted that he did all the work himself.

Three booths were occupied by the Air Service of New England, Inc., sales agents for the Boston Airport Corp., Fairchild Air Surveys, William E. Arthur and Travel Air. The Arthur Model Airport was the center of interest.

B. B. T. of Philadelphia had one of their beacons working, and almost blinded everybody that looked right into it.

The First Corps Cadets operated a searchlight outside the building, and Samuel Perkins flew two of his man-carrying kites, making a pretty sight at night when the beam played on the kites.

The entire list of exhibitors included: AERO DIGEST, Air Service of New England, Inc., American Railway Express, Baush Machine Tool Co., B. B. T., Boston Airport Corp., Boston Automobile Club, *Boston Evening Transcript*, Colonial Air Transport Inc., Dennison Airport Corp., Dept. of Commerce, Fairchild Aerial Camera Corp., Fairchild Airplane Mfg. Corp., First Corps Cadets, Boston, Hess Aircraft Co., Irving Air Chute, James P. Whittall, Kinner Airplane and Motor Corp., Mass. Institute of Technology, National Aeronautic Assn., 101st Observation Squadron, M. N. G., Samuel F. Perkins, Pratt and Whitney Aircraft Co., A. G. Spalding Sons, Stinson Aircraft Corp., Travel Air Mfg. Co., U. S. Army, U. S. Navy, U. S. Post Office, Western Airplane Co., and Wright Aeronautical Corp.

Dan Rochford is to be complimented on the show, and for the very fair treatment he accorded all exhibitors.

WORCESTER AIR MEET

By G. W. HAMBLIN, Jr.

WITH a stirring march by the De Molay Bank of Worcester, the Worcester Airport was officially opened on the afternoon of October 12. The opening dedication was originally scheduled for Saturday, October 8, but Jupe Pluvis decided otherwise, and the meet was postponed to the next day, which was also rainy. Therefore, "Jimmie" Whittall and his associates got a better break by having a fine day on the holiday and had ten thousand more people than would have been there on either of the previous dates.

Whittall Field, as the drome is officially known, is named after the late Matthew John Whittall, founder of the carpet mills in Worcester that bear his name, is located five miles southeast of Worcester, in North Grafton, atop Brigham Hill. The runways are the conventional T type, each leg being approximately 1,900 feet long, running north and south and east and west.

Immediately following the speeches of dedication, given by Congressman G. R. Stobbs, State Treasurer W. S. Youngman representing Governor Fuller of Massachusetts, Capt. Howard Chandler representing Governor Spaulding of New Hampshire, and Mayor O'Hara of Worcester, the races were started. The races were started on the time stated in the program and everything was shipshape all afternoon, a thing that this reporter thought was not possible in an air meet. All credit is due Jimmie and his cohorts for the marvelous manner in which the meet was run.

Ralph "Kitty" Barrows, gave the thirty thousand people gathered at the field a taste of what was to follow by pulling his usual dead stick landing when he came in from Hartford. "Kitty" should really be called "Dead Stick" Barrows, because he does this stunt like nobody's business.

Fraulein Thea Rasche put on a very neat series of stunts with her Flamingo plane. The crowd was given a chance to applaud her to the echo when Jimmie Whittall took her all around the field in his automobile after her stunt exhibition.

Allan Bourdon, flying the Kinner plane of the Dennison Aircraft Corp. of Atlantic, Mass., walked off with the first race, which was for planes of 100 horse or less, at an average speed of 112.6 miles an hour. Charlie Descomb of Hartford, flying a Swallow, was second. "Auggie" Pabst, crack pilot of the Harvard Flying Club, took third prize in the Club's new OXX-6 Travel Air. "Auggie" turned in a nice piece of flying, considering it was his first race and that he started last with eight competitors ahead of him.

The tri-motored Fokker of Reynolds Airways of New York copped first place in the high-powered commercial race, winning over Dick Cobb, who was flying Fred Ames' Whirlwind Travel Air, and Bob Fogg of Concord, N. H. in his Whirlwind Waco-10. Cobb came near cracking up in this event when the gas tank cap came off and struck him on the forehead, almost knocking him out. Fogg lost his way and had to go back to round the second pylon, thus delaying himself considerably. "Bob" O'Brien, at the controls of the Boston Airport Corp's Whirlwind Travel Air, got completely lost, and discovered that he was over South Framingham, thereby letting himself in for a whale of a riding from the boys when he finally landed.

Lieut. Clarence "Dutch" Shankle of the 101st Observation Squadron, M. N. G., easily won the military handicap race, to the great joy of Major Wooley, commander of the outfit. Lieut. "Lou" Eller of Hartford, flying a Vought, finished second, and Lieut. Dick Cobb, Boston Airport, was on Lou's tail for third place.

Lieuts. H. D. Palmer, commanding officer, H. C. Busbey, and J. T. McHugh of the Marines, in Curtiss Hawks, gave the prettiest exhibition of formation stunting that most of the Worcesterites have ever seen. Later, the three ships raced making three laps of the 19-mile course. Lieut. Palmer won the race, with Lieuts. Busbey and McHugh finishing in second and third places.

There was a comedy event on the program, consisting of a non-stop flight to Paris Green and return, by two "intrepid aviators," citizens of East Overshoe. The two boys spent a whole week building their plane, and tested it one dark night without a prop. The plane was very interesting, containing, among other things, a kitchen stove, washing machine, radio, bath tub and shower and a furnace. After cruising up and down the field, the birdman declared that their Rong Motor was not revving up any higher than four revs per minute, and that they could not get off the ground without being towed. As nobody wanted to have such a parasite attached to his plane, the flight was called off, and the "Spirit of Ammonia" was relegated to the junkheap to be overhauled.

The Free-for-all Race was won by Bob Fogg in his J-5 Waco, with Fred Ames J-5 Travel Air in close pursuit, and the Fokker, flown by Eddie Connorton and Hughy Wells, in third place. Fogg parted the branches of several trees to keep near the ground, and flew a masterful race all around the course.

Lieut. R. G. Thomas of Squantum Naval Air Base took first honors in the Service Aircraft Training Plane Race, flying a Whirlwind Vought.

Walter Henry Johnson of Danielson, Conn. delayed his chute jump until all the other events had been run off, and just before the meet closed, hopped off with "Kitty" Barrows, climbed to 1,500 feet and made his fifty-eighth jump.

Lieut. Harry Depew Copland, of the Interstate Airways, Inc. of Hartford, Conn., came in in his new Eaglerock, and announced to the writer that he was teaching Governor Trumbull of Connecticut to fly. Harry says he's the only pilot in the country that has a governor of his state as one of his pupils, and so far as we know, he's right.

B. F. Billings, manager of operations for the Boston Airport Corp., was on deck with his green Stinson-Detroiter, in which the writer flew to the meet, and also with his J-4 Travel Air. Ralph Wickford flew the Stinson, Billings the K-6 Travel Air, belonging to William Eaton of Boston, and O'Brien flew the J-4 Travel Air. Harry Hermann of Springfield Airlines was there with a Swallow, and Franklin Kurt of Dennison Airways had a Waco-10 and a Kinner on the field. All-in-all there were thirty-two planes on the line.

A splendid feature of the meet was the speech amplifiers, installed by the Western Electric Co., which enabled everybody on the field to understand what was going on.

The committee in charge, composed of James P. Whittall, chairman, M. Whittin Whittall, treasurer, H. L. Gustavson, publicity, Carl Keniston, engineer and John W. Lasell.

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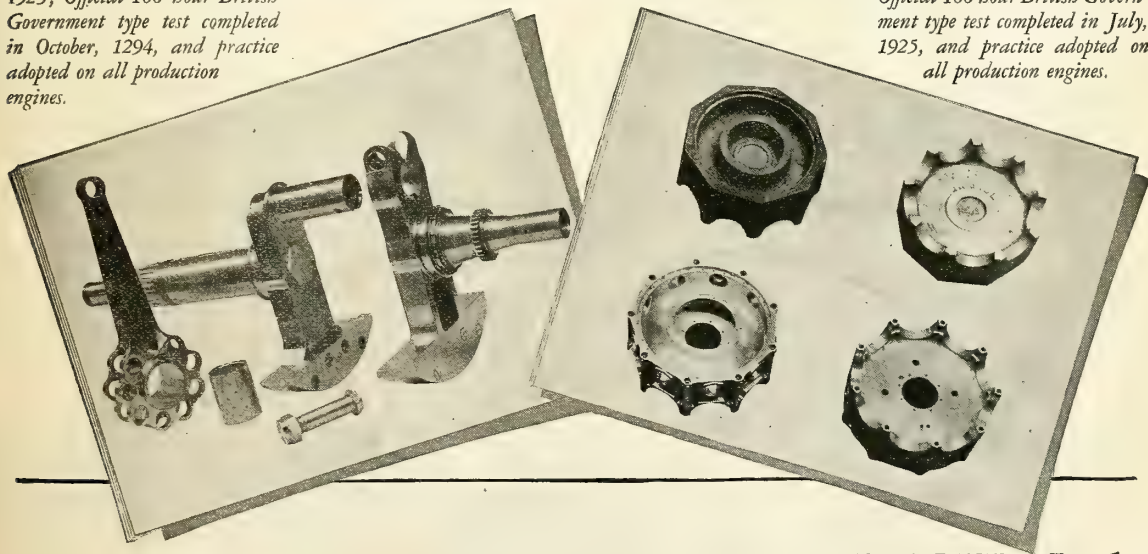
Solid Master Rod and Split Crankshaft

Design begun November, 1922; Design completed June, 1923; Parts first produced July, 1923; First engine completed November, 1923; Official 100 hour British Government type test completed in October, 1924, and practice adopted on all production engines.

accessories at the rear of the engine are examples of the far-sighted design policies perfected and placed in production by Bristol in the Bristol Jupiter engine.

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NORTH CENTRAL NEWS

By H. A. LINDBERGH

THE Fargo Aeronautic Club, the first of its type in North Dakota, was organized in the spring of this year and has been active in promoting the interests of Fargo along aviation lines. They have been instrumental in having the City of Fargo purchase a 160-acre tract of land that will be equipped for all types of flying within a short time.

The Monocoupe, manufactured by the Central States Aero Co. of Davenport, Iowa, piloted by V. L. Roberts in the National Air Derby as an entry of the Fargo Aeronautic Club, broke its prop when within one hundred feet of the home field. This small 3-place cabin monoplane, powered with the five cylinder Air Cat radial engine, created great interest at the starting point as well as at the several stops along the route.

C. A. Trump, of the Trump Airways of Minneapolis, has been in Fargo a number of times to discuss the possibility of opening a mail and passenger line between the Twin Cities and Fargo and later extending this route to Winnipeg.

PHILLIPS CARLIN, director of WEAF of New York City, broadcasted his first impression of Minneapolis from a PT-1, one of the ships used by the 109th Aero Squadron-Minnesota National Guard, during the afternoons of the three days during which the sixth annual Radio and Electric Show was held at the Minneapolis Municipal Auditorium.

Out of about 1,500 flights made by the boys of the 109th Aero Squadron, with Major R. S. Miller commanding, there have been only two forced lands, which were caused by minor troubles, so this is a record of which the members are proud.

"DOC" ELLIS, operating at the Robbinsdale field near Minneapolis, has contracted with a private detective agency to protect his ships from theft, and thieves have been warned that any theft will be prosecuted to the full extent of the law.

Two ships have disappeared mysteriously from this field during the year and one is AWOL from the Wold-Chamberlain field, so these precautions were taken to prevent more ships leaving with unknown pilots.

PILOT G. O. IMM of the Northern Airport at Maynard, who has the Waco agency for Minnesota, has been as busy as the proverbial one-armed paper-hanger with the hives, trying to unsell some of his prospective buyers of the new "Ten" so those in most urgent need of a new ship can "step forward" on the waiting list a few notches, but it seems as if his efforts are without avail.

Jimmy Zarth is barnstorming and demonstrating the new "Ten" throughout the state, while a recently purchased "Nine" is used for student instruction at Maynard.

AS the Chamber of Commerce committee, which was chosen to determine the best means of acquiring a municipal flying field for Duluth, has had difficulty in securing the site selected as being the most desirable at a reasonable figure, the flying activities

are still being carried on at the Arrowhead Airways field across the bay in Superior.

Duluth's hilly nature makes it difficult to provide a large enough landing space that is close to the center of the town, as well as being convenient to reach.

WHEN H. B. Scott, vice-president of the Live Stock National Bank of Sioux City, Iowa, made his tour of inspection of live stock in the neighboring states, it no doubt was the first trip of its type ever made by a bank official.

Scott traveled in the ship owned by Jay and John Gehan of Westington Springs, South Dakota, to their western destination at Miles City, Montana, stopping at various points for the purpose of inspecting cattle, relative to negotiating loans.

THE Pioneer Fliers, Inc., (Archie Peterson, Geo. C. Barrett and Stanley Mac-Peak), Eaglerock dealers for northern Iowa, are patiently waiting for their new ship so they can resume their business at the municipal airport.

The steel hangar, built by the Butler Mfg. Co., is jointly occupied by the Pioneer Fliers and the Mason City Airways, dealer for the American Eagle.

Mason City's 80-acre municipal field is marked with a 100-foot landing circle and accommodates ships as large as the "Stanolind," owned by the Standard Oil Co., which has set down at this field several times.

In the spring this field will be equipped with lights for night flying and other features will be included so as to make it an up-to-date airport.

AN ordinance was recently passed by the City Council of Fond Du Lac, Wisconsin, in which regulations for the operation of aircraft over the city were specified.

The flying field used by the Rapid Air Lines, Inc., is one mile northeast of the business section, with a railroad, telephone line and snow fence along the southeast boundary. Gas, oil, and water are available whenever desired as mechanics are on the grounds at all times.

A CONTEST is being sponsored by the Public Affairs Committee of Superior in which two prizes are being offered in Duluth as well as Superior. The girl from each town who sells the most buttons, the proceeds of which will be used in improving the Arrowhead Airways Field, will receive a flying suit as well as complete flying instructions. The second place winners from Duluth and Superior will be entitled to a seven hours flight each.

As Joe Goodall is the only one making

parachute drops in this section, he has been busy fulfilling the numerous demands for his services at the small fairs in the surrounding towns as well as at activities in Duluth and Superior.

Eddie Middagh is patrolling the right-of-way of the Duluth, Missabe and Northern Railway on the lookout for forest fires that usually menace northern Minnesota in the fall and spring.

THE Governor of North Dakota was present at the dedication of the Hector Airport during the latter part of October. In the spring, markers will be placed on the field, and light, telephone, gas, oil and water service will be available.

Two of Fargo's buildings are marked with the name of the town as well as the usual arrow and can be seen at a 3000-foot altitude.

RAPID CITY, South Dakota, has been a busy place this summer with the influx of tourists desiring to see the nation's leading figure, who made the now well-known statement "I do not choose to run," which has been jokingly applied to some of the "crates" that have outlived their reckless days.

ANOTHER link in the constantly increasing network of air passenger lines throughout the country was added recently with the inauguration of the Duluth-Twin Cities Air Line. The Trump Airways, Inc., of Minneapolis are the operators of this route and Cecil R. (Sinnie) Sinclair is the chief pilot for the Trump brothers, Clarence and Frederick.

AMERICAN WOMAN'S AIR COUNCIL

THE latest evidence of Milwaukee's air-mindedness is the American Woman's Air Council organized there in August. The purpose of this organization is to encourage airport development, give the women of America an opportunity to do their part in the advancement of aeronautics and to instill in the youth of this country the knowledge that air development means progress in civilization.

Charter members of the Woman's Air Council are: Grace M. Yoss, Lillian Baker, Loraine M. Steinberg, Jean Stewart, Mable Lee Brand, Mrs. Edith Adams Stewart, Welcome Yoss, president; Stella M. Burham, C. F. Hull, Mrs. William Whitney, Mrs. Flora J. Egle.



Verne L. Roberts and his Central States Aero Co. Monocoupe entered by the Fargo Aeronautic Club in the New York-Spokane National Air Derby.

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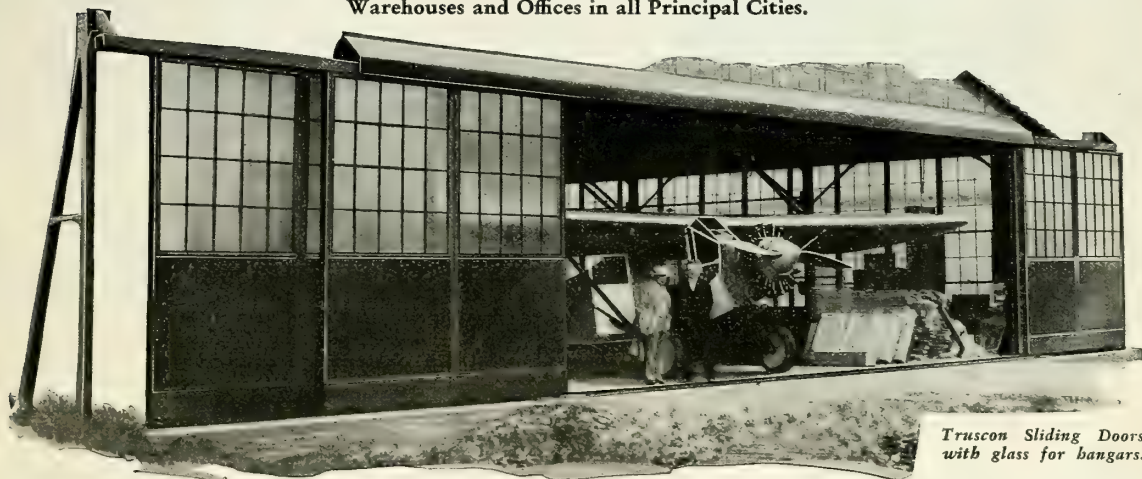
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DALLAS AIR NEWS

By MONT HURST

EDWARD F. SCHLEE and William S. Brock, the round-the-world fliers, arrived in Dallas on Sunday, October 2nd and were met by Mayor Burt and a delegation of prominent citizens. An informal entertainment was tendered them here. They were on their way back to Detroit and left on Monday morning for St. Louis. They were accompanied from the Pacific Coast by Marion Sterling and G. A. Burns in a Stinson biplane.

EDDIE STINSON stopped in Dallas on his way back to Detroit from the Spokane races and was entertained by local business men. With him on the trip were: Roy Cooper, secretary of the Board of Commerce of Detroit, Jack Whittaker, aero engineer of the Tidewater Oil Company, Fred Koehler, mechanic, and R. S. Lewis of Santa Fé, New Mexico.

COLONEL CHARLES A. LINDBERGH flew into Dallas September 27th and spent the night here, taking off for Oklahoma the next morning. It was a rainy and muddy day but thousands were on hand to greet him and it was estimated that a hundred thousand persons saw him in the parade downtown. A banquet was extended him and the Adolphus Hotel was filled to capacity. Colonel Lindbergh was accompanied by a Fairchild monoplane carrying Donald Keyhoe, Philip Love and C. C. Maidment.

CAPTAIN W. I. RIDDELL of the Canadian Royal Air Force visited Dallas in September. He was on his vacation and is making a tour of the country via airplane. He arrived here on a National Air Transport passenger plane and looked over Love Field and the city. Captain Riddell is an air veteran of the World War and is one of the most experienced fliers of Canada.

THERE is much talk and interest in Dallas in the organization of an air squadron in the Texas National Guard. It is hoped that in the near future definite steps will be taken towards forming the unit.

DURING the first month of its service the National Air Transport carried 225 passengers between Dallas and Chicago. Over 10,000 pounds of express and freight were carried. The regular mail service was also kept up to its efficiency. The passenger rate on the planes of the Dallas-Chicago line of the National Air Transport has been reduced from \$100.30 to \$98.90.

A NEW airplane company has been organized in Dallas with T. E. Milholland as president and W. P. Kleber, vice-president and treasurer. Fred Wimberly will be chief pilot. The new concern will be known as the Milholland Airways, Inc. A passenger carrying business will be conducted along with a flying school. The company will be distributors of Eaglerock planes in Dallas, Tarrant, Rockwall, and Kaufman counties in Texas. They have taken over hangar number seven at Love Field and will maintain downtown offices also. T. E. Milholland is a prominent local business man, aviation enthusiast and flier.

GOVERNMENT officials have made a preliminary survey of air conditions along the Dallas to Chicago line and it is expected that some time in the future several Weather Bureau stations will be erected along the line to supply daily weather reports for fliers. Thomas H. Chapman of the Department of Commerce and V. E. Jaki of the Weather Bureau worked on the preliminary survey. Present weather bureau stations are at Dallas, Fort Worth, Oklahoma City, Wichita, Kansas City, St. Joseph, Moline and Chicago. The new stations will furnish more detailed information.

THE Magnolia Petroleum Company is building a service station at Love Field for aviators. The company services commercial fliers as well as Army planes that land at Love Field almost daily. Other improvements are to be made at the field, including the repairs to hangars and repainting roofs.

A large photographic plant will be established at Love Field in the future by the Fairchild Aerial Corporation, Lloyd Long is the local manager for the company.

It has been proposed that the name of Love Field be changed to "Erwin" Field in memory of Captain William P. Erwin, the Dallas flier who disappeared in the Pacific.

HOUSTON AIRWAYS, INC.

HOUSTON AIRWAYS, Inc., has recently been organized for the purpose of operating a commercial flying service, specializing in aerial photography and mapping, cross-country trips, student instruction and advertising. They will operate from Houston's new municipal airport.

Officers of the company are: Joe Glass, president; Dr. Frank J. Iiams and G. L. Loomis, vice-presidents; and C. M. Drayton, secretary-treasurer. For the past six years prior to his connection with this firm, Mr. Glass was employed by the Mexican Aviation Company of Tampico in the capacity of chief pilot and field manager. He is a veteran army pilot of over ten years experience with a record of more than four thousand flying hours without serious accident. Mr. Drayton is also a pilot.



Billy Parker, chief pilot of the Phillips Petroleum Co., Bartlesville, Okla.

CLEVELAND AIR NEWS

By DAVID E. IRWIN

A SECOND aerial taxi company, with a slogan of "Safe and Sane Flying," has begun operations here, offering service to all parts of the country. The concern, the Air Transit and Sales Co., incorporated by Willard E. Leisy and P. B. Rogers, both of Cleveland, will also act as agent in Cleveland for the Central States Aero Co., of Davenport, Iowa, distributing Monocoups. The new company will use the Martin field here.

Aerial taxi service by the Thompson Products Co. has been in operation here for several months.

THE Cincinnati-Cleveland passenger and express line of the Embury-Riddle Air Lines, was discontinued recently to permit the company to use the planes on another route in the south. It will be reopened later, it was announced.

REGULAR passenger service between Detroit and Cleveland is to be opened soon by the Stout Air Services of Detroit, according to Stanley E. Knauss, general manager here. Ford cabin monoplanes are to be flown making the trip in 90 minutes, 15 minutes less than half the usual train time. Two planes will land here daily. The shore line of Lake Erie will be followed until radio direction beacons are established. At that time the route will be on a direct air line, cutting 40 minutes from the schedule.

PLANs for the establishment of an aerial freight and mail route between Cleveland and Port Stanley and London, Ont., Canada are being formulated by the Cleveland and Canada Navigation Co. Two seaplanes, one for transporting freight between Cleveland and Port Stanley, the other for mail between Cleveland, Port Stanley and London are scheduled to go into service by spring.

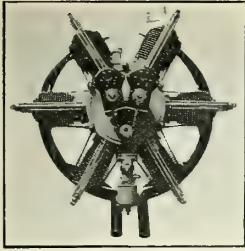
THREE new hangars are to be built soon at Cleveland airport by the air unit of the Ohio National Guard here.

At present the four army P-T planes and one observation plane of the unit are using the old government hangar, used for mail planes before private interests took over the lines.

Every Sunday morning the thirty odd members of the unit are given instruction in flying at the airport. Lieut. C. M. Cummings has charge of the instruction.

CONTRACT for the Cleveland-Louisville mail route has been awarded to the Continental Air Lines, Inc., of Cleveland, on a bid of \$1.22 a pound. Actual operation of the line will not be started before spring because the route, to be used only at night, must be equipped with beacons. The line will make connections here with the night New York-Chicago mail.

Raymond P. Cunningham, president of the Continental, declares that passenger and express service will also be inaugurated over the 339 mile route, touching at Akron, Columbus and Cincinnati.



*First Place in the
Small Plane Field
Since 1909!*

The recent German small plane race was won in competition with the best German motors by the

ANZANI

*Small Plane
Radial Air-Cooled*

ENGINE

The same result follows wherever Anzani Engines are pitted against the best small plane motors the world has to offer.

Anzani Radial Air-Cooled Engines are now established in every country on the globe as the standard aeroplane engine delivering 18-120 h.p., supplying most satisfactory service and selling in preference to domestic engines.

The Anzani 10-cylinder, 200 h.p. type of 1913 has been improved until it now delivers 225-250 h.p. at 1500-1700 r.p.m. for sustained speeds. The radial type, air cooled, four valve Anzani cylinder with double inlet passages, roller end rocker arms and other original features of design, have been widely copied and adopted as standard practice throughout Europe.

**Now available for delivery
90 to 100 days after date
of order, duty paid, f.o.b.
New York for \$3750.00**

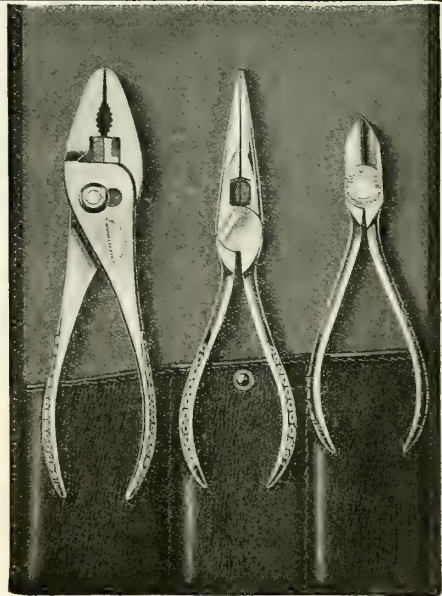
We are now ready to establish agencies with dealers in position to service engines and carry regular parts. Correspondence invited.

BROWNBACK
MOTOR LABORATORIES, Inc.
420 Lexington Avenue, New York City

Vacuum Grip PLIERS

REG. U.S. PAT. OFFICE

Over Half a Million in Use



Aviator's Kit \$5

Set of Three
**Special Introductory
Vacuum Grip Offer**

EVERY mechanic engaged in airplane work should own this set of pliers, which enables him to take care of all operations—whether construction or repair—where pliers are used.

Not "just pliers" but super-quality tools of the finest workmanship, dependable in emergencies and long lasting under the most exacting conditions. Forged from high-carbon electric furnace tool steel, hardened and oil tempered thru and thru, not surface hardened (case-hardened.)

They are perfectly balanced. Very rugged—capacity far exceeds size. Precision-ground joints, oversize tool steel rivets. The cutting edges are sharp and true in alignment. Absolutely guaranteed to give the user 100% satisfactory service.

Set of Three in substantial leatherette case, lined in purple velvet. YOUR NAME ETCHED FREE on handle of each pair. Introductory Price \$5.

ORDER BY COUPON

Individual pliers may be purchased, as desired.

Descriptions and Prices (left to right)

No. 67—The "Aviator"—Adjustable joint, side-cutting pattern; thin nose. Length 7". Price \$2.

No. 196—Long Reach Needle Nose for the hard-to-get-at places. Has side wire cutter. Spring tempered. Length 6 1/2". Price \$1.85.

No. 186—Diagonal cutters. No kit is complete without them. Length 6". Price \$1.90.

Write for catalog showing complete line.

**FORGED STEEL
PRODUCTS CO.**
Newport, Penna.

Forged Steel Products Co., Newport, Penna.

Enclosed is Money Order for Five Dollars, for which you are to send me "Aviator's Kit," postpaid. (If individual pliers are wanted, use this form):

Send me Vacuum Grip No.
No. for which I enclose
Money Order for \$.....

Name

City

Street

State
AD-11

LANSING AIR NEWS

By G. W. HAWKINS

AERIAL acrobatics by an army pilot and a parachute drop by a stunt flier furnished the thrills for a crowd of approximately 2,000 enthusiasts who attended the air show staged at the Capitol City airport near Lansing on Sunday, October 16. The damp and chilly weather which prevailed during the day failed to withhold a large number from taking a hop and viewing their city once from the air. Many also took the 25-mile air tour out over Pine Lake, a nearby summer resort and a fleet of planes of the Foster Airways, Inc., of Lansing, under whose auspices the show was staged, was kept busy a great share of the time in passenger flights.

WITH the delivery recently of a Ryan monoplane, a Waco and an Eaglerock to the two airways firms now operating off the Capitol City airport, an unusual amount of activity has been shown in passenger carrying and cross-country flights. Trips to Grand Rapids and Detroit, both of a business and pleasure type, have become numerous with trips to Chicago, Toledo, Cleveland and other more distant cities interspersed.

INTEREST in airport activities has also been strengthened by the improvement program now near completion, including lengthening of the runways, the north and south runway being stretched from 1,800 to 2,200 feet, and the north and south runway from 1,800 to about 3,300 feet. To accomplish this approximately \$7,000 appropriated by the city and state has been expended, although a portion of these funds made possible the grading and draining of the rest of the field. Other improvements include paving off of the hangar floor, building of a concrete skirt in front of the hangar and a paved runway from it to the main runway.

ORGANIZATION of a light plane club now under way in the city is also expected to boost aeronautical activities here.

The plan of organization, as outlined by those in charge of the project, is to form a club of about ten members, which number, however, may be increased at will, with each member purchasing an interest in the club. The total amount of stock subscribed and paid in would be used for the purchase of a training plane, and also to allow for insurance, maintenance and other items.

The instructor would be maintained permanently by the club or a pilot would be obtained who could devote his spare time to training members of the club at a given rate per hour. When a member reaches that stage in his training where he is considered efficient enough to handle a plane under any and all circumstances, the club plane will be at his disposal for rental any time outside of training hours.

This type of club has met with unusual success in foreign countries, although in practically all cases the clubs work under a government subsidy and are subject to government regulations, while the type of club being organized here would be privately controlled.

TO FURTHER the interest in and development of commercial aviation, the Capital National bank of Lansing sponsored a "flying party" for their employees recently at the local airport. All of the employees who desired an airplane ride were given one at the bank's expense.

THE latest and probably longest cross-country flight to be made from the local airport was consummated when "Ole" Olson, veteran pilot, and "Ted" Lundberg, son of a local manufacturer, flew to Iowa where the former is paying a visit to his parents. Lundberg is a student pilot and was just on the verge of soloing when he started with Olson on the cross-country flight. They flew an Eaglerock plane, the property of the Tyler Airways of Lansing, also operating off the local airport.

NATURALINE TESTED BY SKY WRITER

By CHARLES D. B. COLLYER

MY first experience with Naturaline, a new blended fuel which derives its name from the natural gas of which it is made, was in the late afternoon of October 24. I had six skywriting shows of Rodeo still to do over Greater New York so I had the main tank of the SE-5, which I had been using previously in the day, drained and refilled with Naturaline. I had heard a lot about this fuel which is half a pound lighter per gallon than conventional aviation gasoline, and I was anxious to try out under actual working conditions.

The take-off was average but I just afterward noticed smoke issuing from the exhausts. Realizing that this fuel would vaporize more easily than the usual gas and run richer in the same carburetor setting, I started opening my altitude adjustment. At 4,000 feet I found I could open the adjustment full without any sputter from the motor and with marked increase in revolutions and smoothness. The ship, heavily loaded with sky-writing equipment and full chemical and gas tanks, climbed without effort to the accustomed 10,000 feet, which was more than I could say of that same ship on former flights.

At 10,000 feet I still had my maximum revolutions. After an hour's flying at that altitude and the completion of six demonstrations, I decided to climb higher and find out if I would be troubled by ice forming in the carburetor. Fifteen minutes later I had the ship up to 16,300 feet, with the motor still purring away smoothly. But the little ship had about reached her service ceiling. I cut over to my reserve tank which was filled with the gasoline I had previously been using. After a minute or so there was a perceptible change for the worse in the performance of the motor. By this time I was not only thoroughly satisfied with the practice test of Naturaline but I was also thoroughly cold, and this made me doubly anxious, for certain reasons which have no bearings on this story, not to be late at the Q. B.'s dinner, so down I started without delay.

DELAWARE AIR NEWS

By RAY KRIMM

PHILADELPHIA, Baltimore, Washington and Wilmington will be protected against possible air attacks in war times if the Delaware Legislature adopts a plan to be submitted to that body by Governor Robinson.

The plan provides for the fortified transformation of the present quarantine station below Lewes, Del., into an aviation outpost to guard the middle section of the Atlantic coast line.

"Such an outpost would protect the large cities, their immediate vicinities, the important navy yards at Philadelphia and Washington, the munition production plants at Baldwins, Midvale, Sparrows Point and Bethlehem and the Du Pont powder plants at Wilmington," Governor Robinson said.

"It would also protect the big chemical warfare plants at Baltimore, where gas shells of all varieties would be manufactured in event of war.

"We have no flying field for public use in Delaware but the quarantine station near Lewes is a site I will recommend to the Legislature for such service. It is ideally located for national defense and should be converted to that purpose.

"Delaware made the grant of it to the government without restrictions and it was utilized for some time as a quarantine station. Substantial brick buildings were erected and the ground was drained. Roadways were bettered. When the government discontinued the station's use recently, and refused to continue paying the cost of its maintenance, its action automatically threw the property back to Delaware's possession. It seems to me that this is a wonderful opportunity for Delaware to do something in the way of aeronautical defense that is unusual.

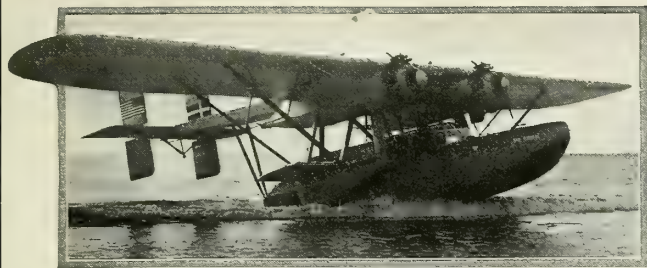
"The available field covers about sixty acres and if more land is needed it can easily be added from adjoining property. With the constant improvement in airplanes the sixty acres may be sufficient."

The Delaware Legislature is expected to adopt Governor Robinson's plans for the aviation outpost. One of the strongest points is that buildings for the housing of personnel are already on the ground and several of the buildings are large enough to be converted into hangars.

AVIATION has beckoned to another young millionaire and its call has been answered through a humble channel.

Alexis Felix du Pont, jr., 22-year old son of the vice-president of the E. I. du Pont de Nemours Company, Wilmington, Del., enlisted in the United States Army at Camden, N. J., on October 25, as a cadet flier. He left at once for Brooks Field, near San Antonio, Texas, where more than 1,300 young Americans are receiving instruction in aviation.

The heir to the du Pont millions took the required flying tests in Boston, three months previous to his enlistment, and was found acceptable as a cadet flier.



"THE DAWN"

The Sikorsky Twin-motored Amphibian Is Finished with Ti-Two Dope

Leading manufacturers of commercial aircraft use TITANINE dope, pigmented dopes, varnishes and enamels on production planes because of its proven protection and beautiful appearance-features which promote sales.

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Registered Trade Mark

TI-TWO DOPE

IS NOW AVAILABLE
IN GLOSSY OR
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Contractors to the United States Government

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(RYAN AIRLINES, INC.)

ADOPTS

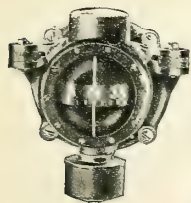
Consolidated Instruments

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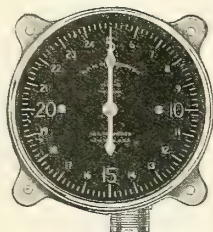
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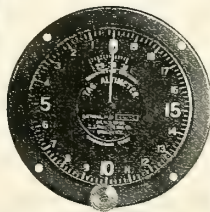
Star Compass



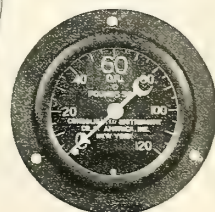
Jones Tachometer



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ARMY BUYS FORD TRIMOTOR AIR TRANSPORT

THE sale of a Ford trimotor air transport to the U. S. Army Air Corps has just been reported. The U. S. Navy bought one early last spring and is operating it for transportation of personnel, practice and general utility service requiring the carriage of heavy loads. Navy parachute instructors have been using the trimotor extensively as a school ship and for exhibition purposes.

In the commercial field Ford trimotors have made fine records for safety and efficiency of operation. The Ford Motor Company has been using two in the daily operation of its air lines. National Air Transport operates one. Maddox Airlines have been operating two between San Diego and Los Angeles, and have ordered another. The Standard Oil Company of Indiana operates one, the Royal Typewriter Company is delivering typewriters via parachute from a Ford trimotor transport. Stout Air Service uses two on the Detroit to Cleveland line. Mr. Rand of the Remington Rand Company of Buffalo maintains one for his personal use and for the executives of the company.

Although all planes have been in constant use in all sorts of weather conditions, their records are absolutely clear of accidents or failures of any kind. This is not only a fine record for the Ford trimotor transport and the pilots but for the entire aircraft industry of America. It is representative of an All-American product, designed by Americans and built by American workmen in a 100% American plant.

Increasing numbers of records of performance and safety like these have placed America far ahead of the rest of the world in the design of safe and efficient airplanes and engines.

OMAHA AIR NEWS

OMAHA has had several flying fields, but the city has recently acquired another at an approximate expenditure of \$73,000. It is a 208-acre tract of land that will be a desirable airport when proposed plans are carried out. It can be located readily as it is situated between the Missouri River and Carter Lake, with several of the larger buildings being marked according to the Department of Commerce regulations, so as to be plainly visible from above. If the field is to be reached by car, the route to follow from the downtown district is plainly marked on the telephone and light poles. The drive through town leads out on a fine boulevard and the airport is reached within about ten minutes, or the street car runs within five blocks of the field.

As Omaha desires to make their airport one of which they can be proud, the American Legion conducted a drive during which \$31,000 was raised. This sum will be used in constructing a hangar that will serve some of the operators using the field until more complete equipment can be built when the funds necessary will be available.

BOEING Air Transport, Inc., who have been operating the Chicago-San Francisco mail service since the first of July, are located

at the Fort Crook field, which is about a half hour's ride from town. They are enjoying a good passenger carrying business and it is often necessary to run additional planes to accommodate all those desiring to make their journey by air.

As the Fort Crook field is so far from the center of Omaha, the Boeing company will probably move their equipment to the new municipal field as soon as the proposed improvements are completed.

C. F. STEELE recently completed the transferring of his equipment from Dodge City, Kansas, to the new municipal field, where he is centering his activities. There are about twenty students receiving flying instructions on the Eaglerock, for which he has the agency in western Kansas and eastern Nebraska.

JOHN (JACK) F. KIRK is selling Wacos and giving flying instruction.

W. A. ELLIS, who is at the head of the Aerial Transportation Committee of the Chamber of Commerce, is keeping in constant touch with the most up-to-date methods pertaining to aviation, so that when Omaha is considering any development there will not be any unnecessary loss of time in finding out what other progressive centers are doing.

MIAMI AIR NEWS

By NORMA DAVIS

WITH the election of permanent officers for the Greater Miami Airport association, south Florida is buckling down seriously to the task of making Miami known internationally as the "air city of Pan America."

The organization has discarded its swaddling clothes with the election of R. V. Waters as permanent president, giving itself exclusively to business until the year's objectives are realized.

Through the new staff of officers the association is working toward a permanent airport for both land and marine planes, the establishment of Army, Navy and Marine air stations and schools here, the reestablishment of the air mail routes out of Miami and the lighting of the airway along the Florida east coast between Miami and Jacksonville. Plans are also being made now for a weather observatory along the air mail route. Every effort of the association will bend toward encouraging commercial flying to and from Miami, with the subsequent development of private air schools and the operation of manufacturing and assembly plants. An effort will be made by the Miamians to obtain, during the next year, national guard and naval reserve air units.

Working with Mr. Waters is the following staff of officers, representing the various sections of the Miami district: O. A. Sandquist, Walter W. Bruns and C. W. Chase, jr., vice-presidents; Leo L. Spring, secretary; C. D. Leffler, treasurer; B. B. Freeland, J. E. Yonge, W. J. Kackley, Hollis Busch, S. P. Robineau, E. J. Sellard and Francis M. Miller, directors.

LIEUT. R. E. BLICK, Hampton Roads, Va., of the naval air squadron VS-5, attached to the north Atlantic fleet and looking for a southern port for winter maneuvers, was recently a visitor in Miami, inspecting the city's airport accommodations.

As the result of Lieut. Blick's survey, which was made at the request of the airport association and the aviation committee of the Miami Chamber of Commerce at the latter's expense, letters and telegrams have been sent to Secretary of War Wilbur and other officials urging the acceptance of Miami for winter training quarters.

Resolutions asking for the reestablishment of a military army air base here are being sent by the two organizations and by civic clubs to government authorities. During the late war the government maintained a naval air station, marine and army air field and an aerial bombing station in Miami.

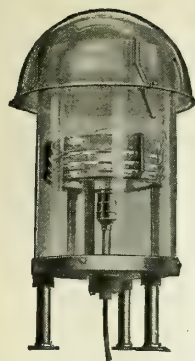
NEW AIRCRAFT CORP. OF AMERICA FACTORY

IN July of 1925 the Aircraft Corporation of America was established for the purpose of acting as a selling agent for airplanes. Included among the stockholders of the company were men of both national and international repute.

An advertising campaign in AERO DIGEST brought such phenomenal results that the company decided it would be a better policy to manufacture their own product, and, as a result of this decision, the company, after serious investigation of various localities throughout the United States, finally purchased 135 acres of land at Milford, Connecticut, near Bridgeport, upon which is now being erected one of the most modern airplane factories in the United States. The property is bounded on the west by the Housatonic River, and offers facilities for both a land and water airport. Being located in one of the greatest industrial centers of the United States, it is close to its supply of raw materials and skilled labor.

It is the intention of the company to develop its flying field into one of the most important airports on the Atlantic seaboard, and, coupled with its manufacturing activities, will establish a flying school.

John H. Stelling, president of the company, is well-known in the automotive and airplane industries, and during the war was connected with Voisin of France in his airplane factories. Associated with Mr. Stelling in the company is Alfred Van Horn, vice-president, president of the Allied Drug and Chemical Corporation, and one of America's enthusiastic business executives in the development of commercial aviation, and Alfred W. Peeler, secretary and treasurer, formerly vice-president of the Montana Bankers Association, and an ex-paymaster in the United States Navy. Supplementing the above officers, who are all directors, the following men compose the directorate of the company: Imre de Josika-Herczeg, capitalist; James B. Taylor, jr., president Uppressit Products Corporation; Charles D. Jackson, president C. D. Jackson and Company; and Harland B. Cushman, Cushman's Incorporated.



Every Airport Beacon

should have a characteristic flash quickly distinguished from all other lights.

The B. B. T. Flashing Beacon
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- The flashing of any letter of the Morse code.
- A longer period of visibility of each flash.
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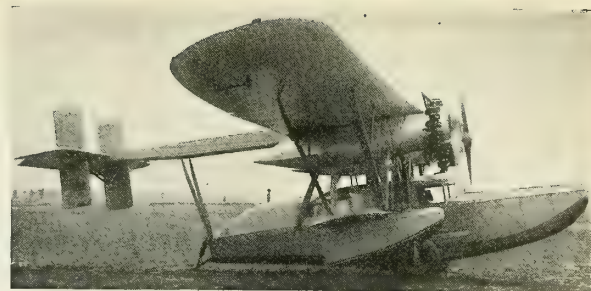
*Our catalog of Aviation Lighting Equipment
will be gladly mailed on request.*

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PENNA.



Sikorsky Twin-Motored Amphibian

FOR those who have felt the handicap of insufficient landing fields, the Sikorsky Twin-Motored Amphibian affords the possibility of using the waterways for landings and take-offs in addition to the existing aerodromes.

Equipped with Sikorsky patented compensating rudders these ships have the ability to fly on one motor with full load which greatly increases safety of operation.

These ships can be supplied without landing gear and used as flying boats.

**Powered with two (2) Wright
Whirlwind J-5 aircooled engines.**

**Comfortable cabin for eight pas-
sengers including the pilot.**

**SIKORSKY
MANUFACTURING CORP.**
College Point Long Island

The offices of the Sikorsky Manufacturing Corporation were moved October 1st, from New York City to the plant of the corporation at College Point, Long Island.

Introducing THE NEW LINCOLN PAGE

Latest development of the Lincoln Aircraft Company in a real three place commercial biplane.



Price, subject to change, \$2485.00 fully equipped F.O.B. Lincoln Flying Field. Dual control regulation equipment. AGENTS WANTED. Commission ranges from 20% to 25% according to number of planes sold. Write or wire for further information. Deliveries ready now.

LINCOLN AIRCRAFT COMPANY
Dept. AD., LINCOLN, NEBRASKA

MINNESOTA AIR NEWS

By W. S. SCHLEY

CHARLES "SPEED" HOLMAN, winner of the National Air Derby for Class A planes between New York and Spokane, came home to St. Paul on October 5 to receive reluctantly and modestly the homage of all St. Paul. The city in whose name he has become an air hero paid tribute to him at receptions, parade, and banquet. To it all, the flier grinned and spoke embarrassed thanks and then put forth a plan which he conceived after alighting first in Spokane—to bring the 1928 national air derby and air races to St. Paul.

Greeting Holman at the air field and receiving with him some of the acclaim was Leslie C. Miller, pilot of the Hotel Lowery "Spirit of St. Paul," a Class B ship, who finished second in his class in the National Air Derby and first in the Spokane-Portland contest.

At the Minnesota club banquet given in his honor, Holman was presented with a gold-framed, illuminated parchment inscribed with a tribute for his victory, the thanks of St. Paul and the signature of city and county officials and representative citizens. Miller was presented with a wrist watch engraved with a tribute to him for making the fastest time from Chicago to St. Paul in his race.

Asa G. Briggs, president of the St. Paul Association, as toastmaster of the banquet, congratulated Holman, Miller and L. J. Shields, president of the National Battery Co., and backer of the flight, for what they have done for the city.

GENE SHANK, Robbinsdale aviator, has solved the commuting and the strap hanging problem in attending the St. Paul College of Law. Shank leaves the Robbinsdale airport in his airplane about 6 p.m. every day and makes the trip to the St. Paul airport in about 10 minutes, using less than a gallon of gas each way. He stays at the Y. M. C. A. nights after attending evening law classes and in the morning leaves the field and in 10 minutes is at work at the Robbinsdale flying field.

When Shank wants to play golf at any of Minnesota's leading courses, he flies to the course selected lands on the fairway and taxis along the terrace to the clubhouse.

ACROWD of 25,000 persons attended the Grove City Air Derby, October 15 and 16, watching planes zoom and spin in races and stunt flying during Minnesota's first open distance air derby.

Repeating his performance of the first day, but bettering his time, Gene Shank of Robbinsdale, flying a Travel Air, again sped to victory in the 65-mile race on the second day of the derby. Mr. Shank followed the derby course which took him over Litchfield, Eden Valley, Paynesville, New London, Spicer, Willmar, Kandiyohi, and Atwater in slightly more than 47 minutes the first day and bettered his time more than 5 minutes the second.

G. O. Imm of the Northland airport,

Maynard, Minn., in a Waco-10, second in the first day's race, finished in the same position, with Jimmie Zarth of the same airport, in a Waco-9, third.

A. M. Sampson of Bellevue, flying a Curtiss Standard, took first place in a stunt flying contest, with Fred Whittemore of the Curtiss Northwest airport, St. Paul, flying and L. S. 5, second.

In addition to the aerial program there was a football game, a motorcycle polo match, two parachute drops by Miss Frances Clark, Minneapolis, and a trap shooting contest.

When presenting the silver loving cups to the winners of the different aerial event, J. O. Engel, who with W. C. McRae sponsored the derby, declared that the two day aerial derby had done much to promote aviation and to demonstrate the potentialities of the industry to the Minnesota citizens.

"PILGRIM'S" PROGRESS

THE Goodyear air yacht "Pilgrim," the world's smallest airship, is again being operated by The Goodyear Tire & Rubber Company from the Wingfoot Air Station near Akron, Ohio, following the procurement of a helium supply from the U. S. government.

The tiny airship was flown to Ford airport at Dearborn, Mich., at the time of the recent International Balloon Race and featured the race program preceding the take-off of the competing balloons. On the day preceding the International Race, the ship, piloted by C. K. Wollam, was taken to the Tam O'Shanter Country Club where a number of demonstration flights were made with prominent Detroit citizens as passengers.

"The Pilgrim" is 110 feet long, 30 feet in diameter, has a gas capacity of 53,000 cubic feet and is powered with a three-cylinder Wright radial motor. The car is entirely enclosed, finished in polished nickel and aluminum, and has the interior appearance of a high-priced automobile sedan. A portable mooring mast of light weight tubular construction accompanies the ship on trips away from the Akron hangar and may be erected in less than an hour's time.

The day following the Dempsey-Tunney fight, Graham McNamee, one of America's best known radio announcers, described the city of Akron from the "Pilgrim" at night. His voice was carried through the air by a small short wave transmitter, installed in the "Pilgrim," and was picked up by the Akron station WADC and relayed to thousands of listeners in Akron and surrounding cities. It was a feature of the Akron Radio Show.

MYRTLE BEACH PORT

AN airport to be one of the best in the country and large enough to accommodate the largest airplanes will be constructed at an early date at Myrtle Beach upon the property owned by Woodside Brothers of Greenville, S. C., and New York. Myrtle Beach is being developed as a coastal resort and it is understood that the Department of Commerce is interested in it as a commercial airport.

SPRINGFIELD NOTES

By HENRY P. LEWIS

AVIATION activity in this city and vicinity continues unabated and at least one of two companies operating planes plans to continue flying service throughout the winter. The past month has seen additional enrollments for flying instruction bringing the total students under Harry Hermann, pilot of the Springfield Airlines, Inc., to 50.

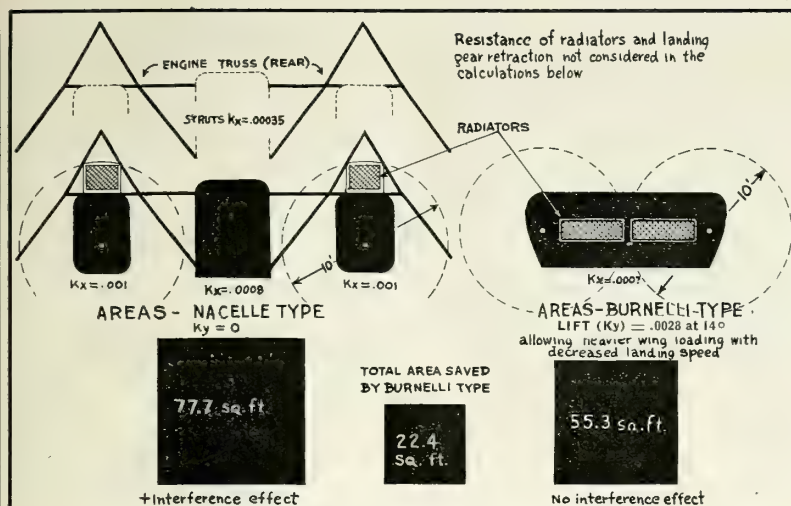
ALARGE number of residents of the town of Longmeadow, where one of the prospective sites for Springfield's municipal airport is located, have filed a protest with the airport committee of the Common Council urging that this city look elsewhere for its flying field. At a public hearing given by the committee a delegation representing the petitioners told of their reasons for not wanting the airport in their town, while several aviation authorities were on hand to discuss the merits of the proposed field. As yet the city has reached no decision as to which of three fields it will select, although it is known that the Longmeadow field has received the endorsement of army and commercial fliers.

THE Barnes Airport in Westfield, 15 miles east of Springfield, was opened this month after the committees from Holyoke and Westfield had completed grading and clearing the tract which embraces nearly 100 acres of perfectly level dry land. The Massachusetts Airways, Inc., with headquarters here, has signed an agreement with the Westfield airport committee which gives the local concern exclusive use of the hangar at the Barnes field with the understanding that the company will maintain the field in good condition.

A ground school for mechanics and aviators is to be conducted here during the current season under the direction of Lieut. Alfred Glode, a former World War flier. A complete course in ground work is planned and the school expects to have several motors for use of student mechanics.

THE Flying Club of Springfield has been formally organized with Winsor B. Day as president. Other officers are Charles A. Frazer, vice-president; Donald Mc Clench, treasurer, and Charles A. Gale, secretary. Andrew B. Wallace and Frank H. and Victor H. Wesson are directors.

APHOTOGRAPHIC division has been inaugurated by the Massachusetts Airways with William H. Mitchel in charge. The company has purchased two aerial cameras and is planning an extensive campaign to promote this branch of its activities. Fred J. Boots, pilot for the company, is giving instruction to several students. James A. Hearn, an officer of the company and a former Army flier, has received a limited commercial license, having completed the required five hours of solo required by the Department of Commerce.



SOME ADVANTAGES OF THE BURNELLI TYPE:

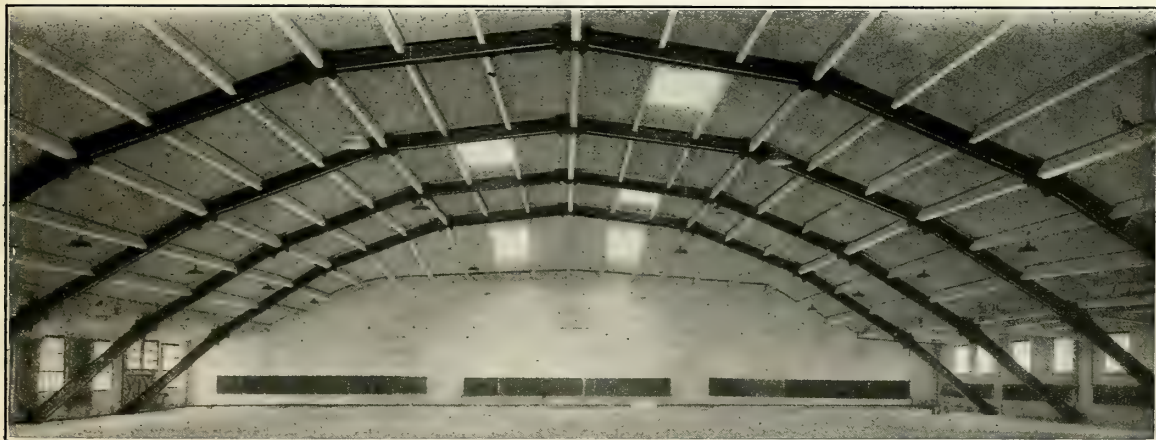
- Accessible multiple engine compartment
- Extensive reduction of head resistance
- Reduced turning moment on one engine
- Fuselage lift reduces landing speed
- Increased capacity of the fuselage
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DETROIT AIR NEWS

By FRANK BOGART

DIRECTORS of Stout Air Services, Inc., have for the first time officially authorized an announcement of their intentions to organize a series of permanent passenger airlines that will ultimately stretch across the breadth of the United States.

The first line is to open November 1 to Cleveland. It will be followed early in 1928 by a line to Pittsburgh, and, says the announcement, prepared and released by the N. W. Ayer Company of Philadelphia, this line will later be extended to Philadelphia.

The fact that this statement was made through the Ayer company, which now serves as the advertising counsel of the Ford Motor Company, is considered highly important and significant as revealing the determination of the Ford Motor Company and Henry Ford himself to make passenger air transport a success in the United States.

The Cleveland line will operate on a 90-minute schedule, two round trips daily. The route is 128 miles long and the fare will be \$18 one way and \$35 round trip. Stout offered the 142-mile trip to Grand Rapids last year for \$16, but he carried only 2,000 persons on this line in 12 months and in the past four months since discontinuing the Grand Rapids service he has carried more than 15,000 persons in his trimotor Ford transports on 15-minute sightseeing trips over Detroit at \$5 a head.

OF equal importance was the announcement made here on October 14 by Howard E. Coffin, president of National Air Transport, Inc., that his company will furnish Detroit's metropolitan area of 2,000,000 persons with direct over night mail and express service to both Chicago and New York, starting January 1.

ON the debit side of Detroit's aircraft ledger this month was the accident to Harold H. Emmons, on October 16, near West Baden, Ind. He was en route from Chicago to a U. S. Chamber of Commerce meeting, flying with Lieutenant Hopkins of Selfridge Field in a DH.

While landing on account of darkness, Lieutenant Hopkins struck a tree in a field.

EDWARD A. STINSON returned October 20 from a three weeks' nationwide tour in the Stinson-Detroiter plane *Miss Veedol*, owned by the Tidewater Oil Corporation. Stinson was reported lost near Boston on one of the last legs of his trip, but he had only landed because of darkness and gone into town to a hotel without thinking to let anyone know that he was safe.

On the last day of the trip he crashed into a stone wall at Marion, N. Y., but preserved his record of never having hurt a passenger, of whom there were five with him. He was able to take the plane on to Rochester, where it was repaired, and he reached home on schedule time.

THE Ford Motor Company, in confirming the report that it will develop 4,000,000 acres of rubber land in Brazil, has announced that airplane communication between here and Brazil will eventually be established, and Ford planes will be taken to South America as soon as the project is under way to aid in the photo surveys preliminary to necessary sanitary and development work.

AN investment of \$18,000,000 in the aircraft industry, with a list of 42 concerns engaged in either the manufacture or the jobbing of airplanes and all their accessories, is claimed for Detroit by the Board of Commerce, in a survey concluded Oct. 22.

Detroit has 1,320 men working full time in aviation and the annual payroll of the companies involved amounts to \$2,500,000, the survey declares.

Besides the four companies actually making planes and the one engaged in development of lighter-than-air craft, there are eight companies nearing completion of experimental work on new airplanes and new types of aircraft motors. Practically all of the vital accessories of aircraft are manufactured here.

A portion of the survey is devoted to the aircraft operation enterprises pioneered with Detroit money. There are four of these on a national scale, while locally nine concerns are engaged in furnishing air taxi, aerial photography, and other service.

WHEN the Stout air line to Cleveland opens, the new passenger depot and administration building on Ford Airport will be opened for use.

SAFETY MEETING

THE Engineers Club of Philadelphia, the Aero Club of Pennsylvania and the American Society of Mechanical Engineers, Philadelphia Section, held a joint meeting to discuss Safety in Aviation on October 13th, at the Bellevue Stratford Hotel, Philadelphia.

The morning was spent on a tour of inspection at the Naval Aircraft Factory.

A luncheon was held at the Engineers Club at which Clarence D. Chamberlin, of transatlantic flight fame, was the guest of honor.

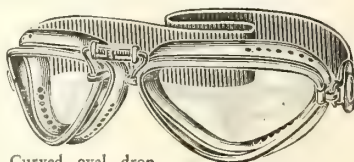
The following were the speakers and the subjects of their addresses at the afternoon session:

J. Brooks B. Parker, "Aeronautical Insurance"; Com. B. G. Leighton, U. S. N., "Motors and their Dependability"; Capt. H. C. Richardson, U. S. N., "Structure and Materials of Modern Aircraft with Special Regard to Safety in Aviation"; Lieut. Edwin E. Aldrin, U. S. A., "Safety from Aerodynamic Design"; C. Townsend Ludington, chairman of the Technical Committee of National Air Transport, Inc., "Safety in Air Transport Operations"; Major Clarence M. Young, Director of Aeronautics, Department of Commerce, "The Air Commerce Regulations from the Point of View of the Department of Commerce"; Clarence D. Chamberlin was asked to give his views on "Safe Flying from a Pilot's Standpoint" as Lieut. James H. Doolittle, who was scheduled to present this paper, could not attend the meeting.

Com. Richard E. Byrd spoke on "Aviation—Instruments and Ground Aids—Trans-Sea and Bad Weather Flying," after the dinner at the Bellevue Stratford. Other after dinner speakers were: Harry F. Guggenheim, "Primary Policy of the Daniel Guggenheim Fund"; Joseph A. Steinmetz, who announced the founding of the Gold Medal for Safety in Aviation to be awarded annually by the Engineers Club of Philadelphia; Hon. William P. MacCracken, Assistant Secretary, Department of Commerce, "Aeronautical Safety"; Capt. Emory S. Land, U. S. N., Assistant Chief, Bureau of Aeronautics, Navy Department, "Commercial Aviation as a Corollary of Naval and Military Aviation".

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BUTLER CO. EXPANSION

A BIG building expansion has just been finished by the Butler Manufacturing Company of Kansas City and Minneapolis at its Kansas City office and plant. The structures that were erected are ready-made steel buildings of a type the company manufactures and show the flexibility of its design.

An extension 90 feet wide and 204 feet long was made on a building that was already 126 feet long, bringing the total length of the building to 330 feet. The original building was finished just a little over a year ago.

At right angles to the new structure another building was added, making an L-shape extension. This addition is 16 feet by 96 feet.

Three years ago the company put up for itself a ready-made steel building. This building measures 50 feet by 126 feet. An extension was made to this building and the length of the building is now 318 feet.

In addition to all these, another L-shape building was just erected. One wing is 40 feet by 152 feet. The other wing is 40 feet by 112 feet. The width of each wing is increased by a shed 14 feet wide, making the total width of the wings 54 feet each.

All buildings that have been put up in this program have monitors. The windows in the monitors are controlled by sash operating devices. All the new buildings have concrete floors. An overhead trolley has been installed for handling heavy material.

Additional ground was bought and additional track facilities for about thirty cars were installed, making in all room for about 60 cars at one time. The total acreage owned by the plant in Kansas City is over nine acres, of which over five acres of floor space are under roof. The Minneapolis office of the company recently bought additional land and buildings, making the total land area there over five acres, of which over three acres of floor space are under roof.

The buildings are made entirely of sheet steel, of clear span construction, with full length monitor 4 feet high and 20 feet wide, extending the full length of the roof with ventilating type windows. Even the doors are of sheet steel.

The Butler Manufacturing Company has had a phenomenal growth. The company was started in 1901 by C. R. Butler, chairman of board of directors, E. E. Norquist, now president and general manager, and N. W. Butler. At the beginning the number of employees could be counted on one hand. Now the employees number 600 and the company's products are distributed throughout the United States and foreign countries, comprising requirements of the oil industry, agriculture, cleaning and dyeing and a multitude of commercial needs for sheet steel products.

Total yearly shipments are about 17,000 tons of sheet steel products. The annual sales have grown from \$50,000 to a sales volume this year over \$4,000,000.

ST. JOSEPH AIR NEWS

THE St. Joseph Mid-American airport, located near the geographical center of the country, is one of the well equipped flying fields of the country. The twelve by three foot "St. Joseph" painted on the top of the gas holder of the St. Joseph Gas Co., with a 50-foot arrow pointing to the field has been seen at an altitude of 4,000 feet. The field is marked with a 100-foot landing circle and the name "St. Joseph" is laid flush with the ground in one corner of the field. In large letters of cement.

Night landing can be done safely as the field is fully equipped with boundary and flood lights and the beacon on Wyeth Park Hill is visible for a distance of 140 miles.

The city has spent about \$140,000 on this airport which is one of the few municipally operated fields in the country that is fully paid for, including the equipment.

National Air Transport, Inc., uses part of the large steel hangar, in which they have been overhauling the Liberty-motored Carrier Pigeons in the air mail service between Chicago and Dallas.

Student instruction at the field is given on a Standard training ship owned by Orville Brown, with Joseph Lawrence and Page MacPhell as instructors.

St. Joseph is also the location of the Bird Wing Commercial Aircraft Co., who are beginning construction on a 3-place dual control biplane with the OX5 as initial power equipment.



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GUGGENHEIM SAFETY
COMPETITION ENTRIES

FIVE British and two American aircraft manufacturers and designers, on the first date when entries were acceptable, filed applications to enter the Daniel Guggenheim Safe-Aircraft Competition. The Fund has also been informed that the engineering forces of several of the most prominent American manufacturers are now making studies to ascertain what sort of plane they may be able to submit for competition later.

The British companies which have already entered the competition are the DeHavilland Aircraft Company; Handley Page, Ltd.; Vickers, Ltd.; Glostershire Aircraft Company and the company which is conducting experiments with Senor de la Cierva's Autogiro. The American entries to date are the Schroeder-Wentworth Company of Chicago, and the Hall Aluminum Aircraft Corporation of Buffalo, N. Y. Several other American manufacturers have signified their intention of filing an application later. Inasmuch as entries will extend over a period of time the trustees expect also to receive entries from French, German, Italian and other foreign manufacturers.

AERON. CHAMBER OF
COMMERCE ELECTION

AT the sixth annual meeting of the Aeronautical Chamber of Commerce of America, Inc., held on October 5, the following officers and governors were elected: president, Col. Paul Henderson, general manager of National Air Transport, Inc.; 1st vice-president, Sherman M. Fairchild, president of Fairchild Aviation Corp.; 2nd vice-president, Chance Vought, Chance Vought Corp.; 3rd vice-president, L. B. Valentine, president of Valentine & Co.; treasurer, C. H. Colvin, Pioneer Instrument Co.; secretary, H. F. Pitcairn, president of Pitcairn Aviation; ass't. treasurer and general manager, S. S. Bradley; ass't. secretary, Owen A. Shannon.

The board of governors in addition to the above are: Maj. Gen. John F. O'Ryan, president of Colonial Air Transport, Inc.; E. N. Gott, president of Keystone Aircraft Corp.; C. L. Lawrance, president of Wright Aeronautical Corp.; J. L. Callan, president of Airships, Inc.; E. A. Johnson, president of Johnson Airplane and Supply Co.; Geo. P. Tidmarsh, Boeing Airplane Co.; F. H. Russell, vice-president of Curtiss Aeroplane and Motor Co.; L. D. Gardner, New York publisher.

GLENS FALLS MARKER

THE only air way marker between New York and Montreal, and between Boston and Buffalo, has recently been completed in Glens Falls, New York. It stands on the roof of the Home Office Building of the Glens Falls Insurance Company. The marker was planned and erected by Government Air Service Officials and is now regularly designated and listed in all Government air-route guides.

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ATLANTA AIR NEWS

By AL MAJOR

CANDLER FIELD, Atlanta's Municipal Airport, which is located six miles from the heart of Atlanta on a paved road and two city blocks from the car line, is in the center of a two-mile race track. The contractor has recently completed the grading which makes the field almost level. Installation of lighting equipment, costing approximately \$13,000, was recently begun under the direction of R. C. Turner, city electrician. The lighting equipment for the field includes a 30,000,000 candle power BBT flood lamp, a 2,000,000 candle power revolving beacon, boundary lights and hangar flood lights. All of the equipment is of the most modern obtainable and was purchased from the General Electric Company. The flood lamp is so designed that the beams of its light rise only 20 feet from the field, thus illuminating a landing space without blinding the descending pilot.

Water and sewerage lines which have been run to the field are being connected to the new \$30,000 Pitcairn hangar and to the sites of the other buildings on the field; the Southern Bell Telephone and Telegraph Co., anticipating quickly increasing flying activities in the field, are running a line capable of caring for 20 telephones.

INAUGURATION of air mail service between Atlanta and New Orleans will probably be delayed until early next year, the St. Tammany Gulf Coast Airways, Inc., suc-

cessful bidders for the route, inform us. A survey of the Atlanta-New Orleans route will not be started until the survey of the New York-Atlanta route is completed, which is expected early next month. When the survey is completed lights must be installed between Atlanta and Mobile, Alabama, as that section of the route will be flown at night on the north bound trip.

ATLANTA has its first enclosed cabin plane, a Ryan Brougham, which was recently flown to Atlanta from San Diego, California, by Beeler Blevins, well known Candler Field pilot. The monoplane was purchased by C. P. Whitehead of Atlanta and will be operated from Candler Field by pilot Blevins.

A new Whirlwind Waco 10 was recently flown to Atlanta by Douglas Davis, who operates the Southeastern Airways, Inc., at Candler Field.

CHARLES A. LINDBERGH arrived at Candler Field October 11 on his tour of the United States. To the 40,000 people assembled at the field he was Colonel Lindbergh, but to the pilots who knew him and particularly his friend and classmate, pilot John S. Kytte, he was still "Slim." To Doug Davis went the honor and pleasure of storing Colonel Lindbergh's plane in his hangar while in Atlanta.

THE forum committee of the Atlanta Chamber of Commerce recently had Robert E. M. Cowie, president American Railway Express Co., talk to them on the

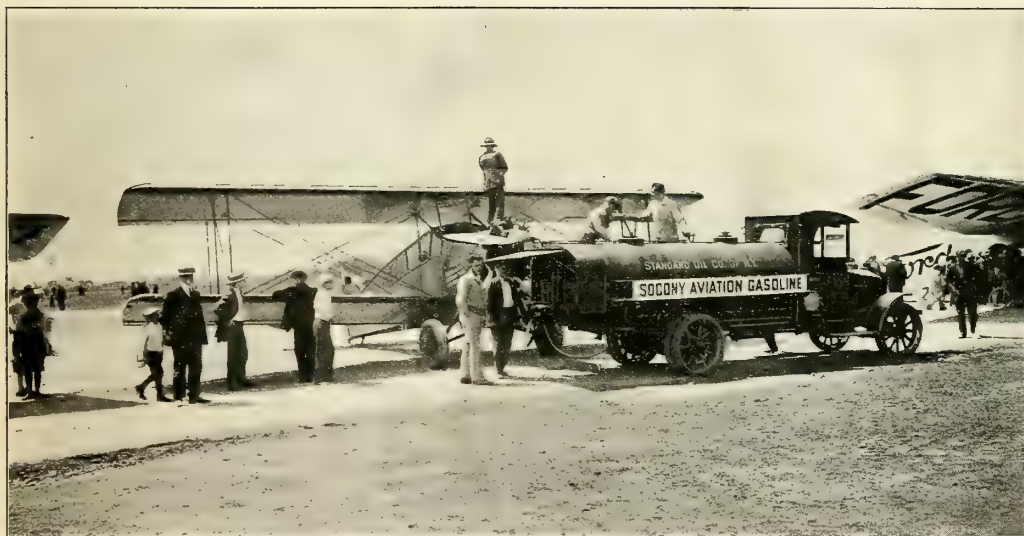
Trend of Transportation. The thing that interested us most in Mr. Cowie's talk was the fact that he stated that he had been up in the air and flew every opportunity he had. He also assured us that we would have express by airplane as soon as we were ready for it.

L. T. WILLIAM V. DAVIS, jr., who navigated the winning plane for Art Goble in the Dole Air Derby, was honored by a luncheon given at the Ansley Hotel by the Service Committee of the Atlanta Chamber of Commerce and the Atlanta N. A. A. Chapter. The Navy flier was in Atlanta on a short furlough to visit his family who live here. Lt. Davis was recently married to Miss Margaret Carey, Pensacola, Florida, beauty and former queen of the Pensacola Mardi Gras Carnival. His relatives and many friends in Atlanta wish him as much success in navigating the uncharted sea of matrimony as he had in the Dole flight.

ALTON AERO CLUB

THE annual election of officers of the Alton Aeronautical Club, Alton, Illinois, took place on August 30th. The following officers were elected:

Edward Terpening, president, reelected; William Harry Foster, vice-president; Edward Noble, secretary and treasurer. Directors—Douglas Getty, chairman; Rand Montgomery, Edward Noble. Junior Flying League—Rand Montgomery, chairman; Kenneth Harlow, secretary and treasurer.



One of the aeroplanes competing in the National Air Tour for the Edsel B. Ford Reliability Trophy and \$50,000.00 in cash prizes, refilling with Socony Aviation Gasoline at the Buffalo airport. Many of the planes also filled up with Socony Aircraft Oil.

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MARSHALL, MISSOURI FLYING SCHOOL

AS is well known in the profession but is not so generally understood by the average enthusiast interested in flying, an ordinary flying course does not always qualify a graduate as a commercial pilot, because the graduate may not have had the necessary number of hours in the air.

A large number of fliers have been getting around the problem of getting the necessary fifty or more hours by taking a regular flying course from a reliable school, and then getting additional hours in the air by renting an airplane by the hour or making other arrangements whereby they can get the use of an airplane for the additional hours.

However there seems to be a certain number of individuals who want to take the entire fifty hours of flying instruction. For the benefit of these the Marshall Flying School has added what they call their Industrial Pilots Course which qualifies for the Department of Commerce Limited Commercial or Industrial Pilots License.

The school is also giving a complete ground course qualifying students for the Department of Commerce license as Licensed Airplane Mechanic and Licensed Engine Mechanic, which must be obtained before they can go out and work on licensed aircraft.

The school has just bought an 80-acre tract of land with a 2700 foot frontage on the main highway to Kansas City and St. Louis, according to a statement by Derek White, general manager of the Marshall School, which will be used for training students. It is a level four-way field, with two runways, one 2700 feet in length in the direction of the prevailing winds, and the other runway 1400 feet long.

Three acres have been reserved and graded for automobile parking purposes and construction has started on two steel 12-ship hangars. In addition a field office, a parts room and a gasoline and oil service station for both airplanes and motor cars is being built.

The field is easily located from the air by observing the markings on the roof of the new Nicholas Beazley Airplane Factory, with which the Marshall Flying School is affiliated, and which has a large arrow pointing to the field located just three miles from the plant. Ten new training planes have just been purchased by the school.

MICHIGAN STATE AVIATION SCHOOL

ARTHUR G. ZELLER, founder and for the past 17 years president and general manager of the Michigan State Automobile School, has established the Michigan State Aviation School in Detroit and has enrolled the first class in the course of practical training in aerodynamics and aeronautics. A three months' ground course which includes engine and plane design, construction and repairs, may be taken either with or without



Derek White, general manager of the Marshall Flying School.

the flying course. Ground instruction is given in both day and evening classes.

The flying course includes sufficient flying instruction in standard, modern planes to enable the student to solo, which is guaranteed to all students and is given without the posting of a bond. Students are qualified to pass Department of Commerce examinations. Aerial navigation and photography are included in this course.

The Michigan State Aviation School is affiliated with the old established Michigan State Automobile School and the ground course is given in their building at 3729 Woodward Avenue, Detroit. Flying instruction is given at the Burns Airport on Plymouth Road near Telegraph Road, close to the city limits of Detroit.

Mr. Zeller has secured Guy Burns of the Burns Flyers to supervise the school. Burns has been flying since the war, has trained hundreds of men to fly and is considered exceptionally well qualified to take charge of this new course.

AMERICAN SCHOOL OF AVIATION TRAINING COURSE

Chicago, Illinois

THE course is a home study training. No flying is taught. However, they offer a splendid preliminary training to the young man who is interested in aviation.

Many of the students complete this course and then make arrangements with flying schools throughout the country to take up actual flying lessons. Others take the course with a view of working in factories as airplane mechanics and maintenance men.

Among the subjects covered in the home study course are: mechanical principles in aviation; theory of flight; construction and operation of airplanes and engines; designing; selection of materials; inspection of planes and parts; installing and inspection of engines; types of engines and planes; meteorology; the operation of balloons, dirigibles, and zeppelins; map-reading; and laws of the air.

AVIATION-AUTOMOTIVE ENGINEERING SCHOOL

SINCE Colonel Lindbergh made the first transatlantic flight to Paris, the demand for trained men and the study of aeronautics in every line has been such that some of the country's most prominent men have awakened to the fact that practical schools are needed. As a result the Aviation-Automotive Engineering School of Long Island City with offices at 32-10 Grand Avenue and school building at 12 Queens Boulevard has been inaugurated.

The aim of this institution is to cover the entire field of the Aviation and Automotive industry. Principles, theory, overhauling, designing, rigging and practical flying will be taught by some of the best known instructors. The most modern devices are being installed for instruction purposes—a Wright Whirlwind engine as well as many other motors, and an American Eagle plane.

James V. Fone is directing engineer; O. B. Williams is president; Charles D. Cords, president of the American Aircraft Corporation, adviser; Lieutenant Irwin K. McWilliams, pilot demonstrator; Salvator Fernand, French Ace, and Acilles Sartini, former instructor in the Royal Air Forces of Italy, pilots.

Classes begin the first of November and there are already more than a hundred students enrolled.

OSHKOSH, WIS., FIELD

OSHKOSH, WISCONSIN, now boasts of a first class air field established and to be operated by the Oshkosh Airport, Inc., which is composed of Richard W. Lutz, president, Francis S. Lamb, A. H. March, A. W. Leupold and Leslie H. Ross.

The field is slightly over 100 acres, within two miles of the Post Office, has good, high, well-drained land, with no obstructions on any side. It is marked with the customary 100-foot white circle in the center. A hangar 80x96, of concrete and steel is nearing completion. In the hangar will be an office, workshop and sleeping quarters for two men who will be in constant attendance.

A. R. Mensing and Steven Shimonek of Chicago expect to establish a flying school on the field and operate an air transport service. All planes will be welcomed at the field.

WATERMAN, ILL., FIELD

A NEW air field has been opened in Waterman, Illinois, sixty miles west of Chicago. This field, which borders the town on the north and west, runs eighty rods east and west and about the same across the west end, with a large thirty-foot stone circle in the center. A four-plane hangar, office, workshop and gas station are located in the southeast corner of the field. At night these are lighted, and lights are now being placed on the tower which carries the wind gauge.

O. W. Matteson and Son operate the field, which is open to all planes wishing service and visiting planes.

S. A. E. MEETINGS

THE 1927 Aeronautic Meetings of the Society of Automotive Engineers were held at the Waldorf-Astoria on October 18, 19 and 20.

Many interesting papers were read during the three-day session and five-minute discussions followed the readings. At the October 18 afternoon session, of which Alexander Klemin was chairman, "Studies in Metal Construction" was the topic taken up by W. B. Stout, of the Stout Metal Airplane Co.; Charles W. Hall, Charles W. Hall, Inc.; Jean Roché, Army Air Corps; Com. R. D. Weyerbacher, Naval Aircraft Factory; and I. I. Sikorsky, Sikorsky Aero Engineering Corp. E. N. Fales, Army Air Corps, discussed "Wind Tunnel Testing."

At the evening session, with Ass't Sec'y E. P. Warner, chairman, the following papers were read: "Technical Problem of Control of Air Worthiness" by C. M. Young, Department of Commerce, and H. W. Stedman, Royal Canadian Air Force; "Monoplane or Biplane," C. H. Chatfield, Massachusetts Institute of Technology; "Single Versus Multi-engine Planes," A. H. G. Fokker, Atlantic Aircraft Corporation.

The program of the October 19 afternoon session, W. L. LePage, chairman, was: "Oversea Navigation," Lieut. Albert Hegenberger, Army Air Corps, and Bradley Jones, Wright Field; "The Engineering of the Department of Commerce Airways," F. C. Hingsburg, Chief Engineer, Airways Division, Department of Commerce; "Instruments for Over-sea Navigation," Victor E.

Carbonara, Pioneer Instrument Co.; "The Direct Application of Commercial Aircraft in the Naval Service," Hon. E. P. Warner, Ass't Sec'y of the Navy for Aeronautics.

Wednesday evening an inspection trip to Hadley Airport was made. Papers on "Airport Lighting" by H. L. Mahan of the General Electric Co. and P. R. Bassett of the Sperry Gyroscope Co. were presented.

On October 20 at the afternoon session, H. M. Crane, chairman, the following papers were presented: "Calculated and Actual Performance of Supercharged Engines," Opie Chenoweth, Wright Field, Army Air Corps; "Maintenance of Wright Air-cooled Engines in Commercial Operation," Captain C. H. Biddlecombe; "The Place of an Airport in a City Plan," John Nolen.

That evening a meeting on airports was held, with Charles H. Colvin, chairman. William E. Arthur, William E. Arthur & Co., talked on "Design and Construction of Airports"; Hon. William P. MacCracken, jr., Assistant Secretary of Commerce for Aeronautics, on "A Commercial Airport for New York"; Gen. J. F. O'Ryan, president, Colonial Air Transport, Inc., on "Airports and Their Relation to Commercial Aviation."

SPLITDORF ENGINEER SEES AERO PROGRESS

COMMERCIAL aviation is due for a big impetus in the near future, in the opinion of E. B. Nowosielski, chief engineer for the Splitdorf Bethlehem Electrical Co., who has been making a special study of airplane

requirements following the recent National Air Races at Spokane.

"It is very apparent," said Mr. Nowosielski, "that the airplane industry is becoming slowly stabilized, while in a large measure still dependent on government patronage."

"I particularly observed that the larger airplane builders are laying the foundation for great airliners made entirely of metal for mail, passenger and express service. These airplanes will be the result of a thorough study of the requirements necessary for commercial aviation in a broad sense."

In the National Air Races Splitdorf VA magnetos were used on planes that won in the following races: Liberty Engine Builders Trophy Race—Lt. H. A. Johnson, U. S. A., in Curtiss Falcon, average speed 170 m. p. h.; Lt. G. A. McHenry, U. S. A., in Curtiss Falcon, average speed 164 m. p. h. Free for All Pursuit Ship Race—Lt. Eugene Batten, U. S. A., in Curtiss Hawk, average speed 201 m. p. h.; Lt. A. J. Lyon, U. S. A., in Curtiss Hawk, average speed 189 m. p. h.

FREE GROUND SCHOOL

A GROUND school for gratuitous instruction of members of the Tulsa Chapter of the National Aeronautical Association and student pilots will be started during the early part of November under the direction of John T. Owen, chief engineer of Barnsdall Refineries, Inc. The school will be held at the McIntyre Airport and preparations are now under way to model an ideal class room.



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FOREIGN AERONAUTICAL NEWS IN BRIEF

Compiled from the foreign aeronautical press, the Automotive Division and the Transportation Division, Bureau of Foreign and Domestic Commerce

ENGLAND

FOUR Supermarine Southampton metal constructed flying boats of the British Air Force started on October 17 from Plymouth on a year's cruise to Egypt, India, Singapore and Australia. The 25,000-mile cruise is under command of Group Captain H. M. Cave-Browne-Cave with Squadron Leader G. E. Livock, second in command. This is the longest and most ambitious cruise yet undertaken by British flying boats.

MRS. KEITH MILLER and Captain W. N. Lancaster climbed into their Avro Avian light plane *Red Nose*, equipped with a 32/80 h. p. A. D. C. Cirrus engine, on October 14 and started on a 13,000-mile flight to Australia. This is believed to be the longest air journey ever undertaken by a woman.

They will fly in stages across Europe to Africa; then along the Imperial Airways route to India and over Burma, Siam and the Dutch East Indies to Port Darwin.

MRS. S. C. ELIOTT-LYNN, flying from the Avro Aerodrome, at Woodford, Cheshire, on October 8 attained a height of approximately 19,200 feet in an Avro Avian two-seater light plane. This record has not been officially confirmed but is believed to constitute a world's record for this class of machine. The "Avian" was fitted with a 90 h. p. Alpha engine made by Messrs. A. V. Roe and Co., Ltd.

Mrs. Elliott-Lynn was married, on October 11, to Sir James Heath. She is one of England's most prominent women pilots.

The former record was held by the Hon. Lady Bailey who, accompanied by Mrs. Geoffrey de Havilland, reached a height of 17,283 feet in a D. H. Moth on July 5.

THE Britannia Challenge Trophy which is awarded each year to the British aviator who, in the opinion of the Council of the Royal Aero Club, has accomplished the most meritorious performance in the air during the year, has again been awarded to Sir Alan Cobham, K.B.E., this time for his flight to Australia and back between June 30 and Oct. 1, 1926.

CANADA

THE Canadian Government has placed orders for 26 new airplanes and equipment at a cost of approximately \$400,000. The purchases include 3 American planes, 18 Avros, 2 De Havillands and 18 Siddeley Lynx engines, all of British construction.

According to figures issued by the Dominion Bureau of Statistics, there were imported into Canada from the United States in the first six months of 1927 the following aircraft products: 13 aircraft valued at \$171,340; 6 aircraft engines valued at \$54,936. Comparative imports from Great Britain were valued at \$29,284 and \$145,828 respectively.

CANADIAN AIR NEWS
By James Montagnes

FOLLOWING an announcement made recently by Col. Hon. J. L. Ralston, Minister of National Defence, that the government would make a grant of two planes to each flying club in the Dominion to encourage aviation, a dispatch from Ottawa states that these planes will only be of types proven adaptable to Canadian flying conditions. The Moth plane, the type best adapted to the country as proven by recent flights in the Arctic ice field and Northern Ontario, will be the type likely to be supplied to flying clubs next April.

The government requires only that the club or association make provision from its own resources for adequate housing, repair and maintenance of the aircraft, and a suitable field or seaplane station for their operation, and provide for the services of a duly qualified instructor to supervise the flying, and a licensed air engineer for the maintenance of the aircraft in an airworthy condition.

The terms of the agreement will be for not more than five years from the first of April, 1928, and it is further proposed, should the demand for flying instruction exceed the capacity of the two aircraft so issued, the department may issue, each year after the first, one light airplane, provided the club supplies a similar machine of an approved type.

From calculations of officials of the Toronto Aeronautical Association, this scheme will put two planes in each of the following cities: Quebec, Montreal, Toronto, Winnipeg and Vancouver.

In Toronto an airport is practically assured very soon, land having already been granted the local association by a private citizen.

MONTREAL LIGHT PLANE CLUB
By C. P. C. Downman

ALIGHT airplane club has been formed and incorporated in Montreal with an initial membership of over one hundred. The following officers have been elected: president, W. S. Lighthall; vice-president, L. G. St. Jean; honorary secretary, E. F. Peacock; honorary treasurer, M. Peiler; directors, G. K. Trim, Frank McGill, Jacques Cartier, H. St. Martin, and C. Gordon Brown.

Communication has been established with the civilian branch of the Department of National Defence, Ottawa, and with light airplane clubs in Great Britain. The government has placed its airdrome, to be constructed at St. Hubert, which is across the river St. Lawrence from Montreal, at the disposal of the club, and hangars will be available for housing the air machines.

The club accepts responsibility for damage to their airplanes, and legal liability for damage to third parties, except where such damage is caused wholly or in part by willful breach of the rules of the club.

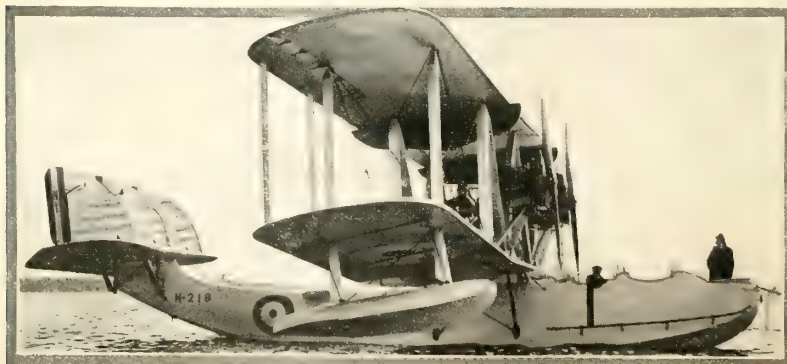
The entrance fee of flying members was fixed at \$25 and the annual dues at \$25 and for non-flying members the entrance fee shall be \$10 and annual dues of \$15.

G. K. Trim gave the members an estimate of operating costs for the 1928 season, basing his figures on information received from the Royal Canadian Air Force, light airplane clubs in England and on experience.

The capital charges were estimated at \$4,000, the principal item being \$2,000 for the main hangar, and the capital income estimated at \$5,250, leaving a surplus of \$1,250. Annual charges were set at \$12,265, and annual income at \$13,400, leaving an annual surplus of \$1,135.

The operating cost of flying was placed by Mr. Trim at \$6.99 per flying hour, figuring on two machines operating 25 hours a week, each a total of 50 hours a week with a season of 20 weeks; gasoline, oil, engine depreciation, and overhaul every 450 flying hours, machine depreciation and repairs, and insurance being included.

Charges will be \$5 per hour to those who take a machine up for either instructional or solo flying, non-flying members being permitted to hire planes at the same rate, though they are not entitled to fly them. The government will make a gratuity to the club of \$100 for every member who obtains a certificate.



The Supermarine Southampton metal flying boat equipped with two Napier Lion 400 h.p. engines, four of which are on a year's cruise from England to Australia.



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17th century homes and estates, are splendid modern hotels and boarding places. Golf, tennis, all water sports, all winter. No motors, railways, trams, factories.

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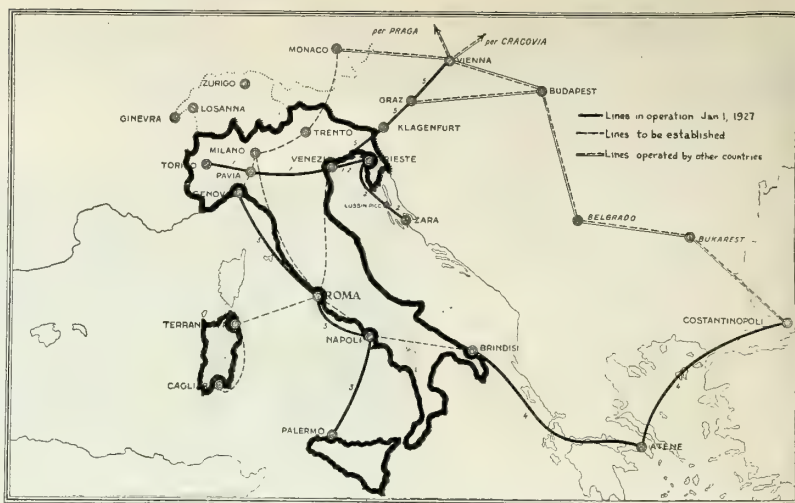


AERIAL passenger service was inaugurated between Lisbon and Madrid, and Lisbon and Seville, by the Services Aerijs Portugueses, Ltd., on June 10, 1927. Flights are made three times weekly in each direction. 4 hours and 15 minutes are required for the Lisbon-Madrid flight, compared with 17 hours by the fastest train, and two hours and 30 minutes for the Lisbon-Seville flight. There is no direct train service between the last named cities.

THE French Latecoere Aviation Company, the first concern to obtain a concession for an airline in Brazil, will soon start regular service between France, Brazil and the Argentine. The first landing place in Brazil will be on Fernando do Noronha Island, the next stops will be in Recife, Pernambuco, Bahia, Rio de Janeiro and Santos. Mr. Paul Vachet, representative of the company, is organizing the necessary landing places. He has found a suitable place in the bay of Fernando do Noronha, north of the S. Antonio Port, which will require a mole of 300 meters to be built connecting Fernando do Noronha with the small island of S. Jose.

A "RESTAURANT Plane" has been placed in daily operation between Paris and London by the Air-Union. The plane carries a pilot, a radio operator, a cook, waiter and 10 passengers and their baggage. It is one of the fastest in Europe, covering 235 miles in two hours, and is equipped with two engines.

JEAN CALLIZO, who claimed that on August 29th he had made a world's altitude record of 13,000 meters, was found to have falsified his barograph, making it register 13,000 meters when he really reached only 4,000 meters. He has accordingly been disqualified by the Aero Club of France.



Map showing the existing and proposed Italian airlines.

ITALY

THE Italian Air Ministry has just published a statistical report on the air traffic on Italy's five airlines: Turin-Trieste; Venice - Trieste - Zara; Genova - Palermo; Brindisi-Athens-Constantinople, and Venice-Vienna.

General results of operation on the Turin-Trieste, operated by the S. I. S. A.—Societa Italiana Servizi Aerei—from April 1st to October 15th, are: Number of flights, 355; kilometers flown, 201,592; passengers carried, 1,382; mail carried, 1,084 kilograms; freight and luggage carried 11,892 kilograms; seats occupied on planes, 97.32 per cent.

On October 16th, 1926, the service on the Turin-Venice airline was suspended, and on the same date a special bi-daily service began on the Venice-Trieste-Zara line and was continued up to December 31st.

The operation results are: Number of flights, 214; kilometers flown, 36,670; passengers carried, 206; mail carried, 100 kilograms; freight carried, 1,578 kilograms; seats occupied on planes, 25 per cent; regular flights on the Venice-Trieste line, 100 per cent; regular flights on the Trieste-Zara line, 98 per cent.

The Genova-Palermo line is operated by the "Società Anonima di Navigazione Aerea." It consists of three different lines: Genova-Ostia (Rome), Ostia-Naples and Naples-Palermo. Each line was flown in both directions by a different plane, twice weekly during the first month; three times weekly during the second month, and three times weekly from the third month on. The actual flights were as follows: Genova-Ostia, 88 flights; Ostia-Naples, 204 flights; Naples-Palermo, 192 flights; total, 484.

Out of the total flights, only five were delayed; two owing to motor trouble, two to machine defects and one to weather conditions. Total percentages are as follows: Regular flights, 66.30 per cent; flights interrupted owing to weather conditions, 29.15 per cent; flights interrupted owing to machine defects, 1.55 per cent; flights interrupted owing to motor troubles, 3 per cent. There were no accidents during the nine months.

General operation results:

No. of flights	Km. flown	Regular Flights				Passengers
		Flying hours	Mail kg.	Freight kg.	Luggage	
484	162060	1076	496	4638	9931	1814
<i>Other Flights</i>						
24	9845	64	...	...	...	127
5088	171905	1140	496	4638	9931	1941

The Brindisi-Athens-Constantinople airline was operated by the "Societa Anonima Aero Espresso Italiana" from August 1st to the end of December with two flights weekly in both directions.

Total results of five months' operation:
Kilometers flown, 56,366; passengers, 57;
mail, 138 kilograms; freight, 5,002 kilograms.

The Venice-Vienna line was operated with single-motored planes (to which, in October, a Junkers three-motored machine was added) from August 18th to the end of December. During the first month, the line was flown three times weekly; during the second month the service was operated daily, but only on the Venice-Klagenfurt line; from the third month the total number of flights should have totaled 196, but only 159 were actually carried out. Out of these 159 flights, 70 covered the whole line, and 44 the stage from Venice-Klagenfurt (the service on the stage Klagenfurt-Vienna having been suspended for a month). On the other side 30 flights had to be interrupted owing to the bad weather conditions and were terminated on the following days. Regular flights amounted to 72 per cent.

Most European airlines suspend their activity during the winter time, but service on the Venice-Vienna line across the Alps, considered hitherto as a formidable hindrance to air traffic, was maintained during the whole winter.

Total operation data on the entire line: Kilometers flown, 523,122; flying time, 3,524 hours; passengers, 3,991; mail, 1,571 kilograms; freight, 40,907 kilograms; available seats on planes, 8,712; occupied seats, 3,991; total, 45.80 per cent.

No accidents to passengers occurred on any of the lines.

IT is reported that Major Mario de Bernardi, who won the 1926 Schneider Trophy, has made the record speed of over 300 m.p.h. over the six kilometer course at Lido, Italy, in a Macchi seaplane.

IT IS COMING!

AERO YEAR BOOK

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For 1928

The first edition of the Aero Year Book, "The Blue Book of American Aviation," for 1928 is now in course of preparation.

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Instead of several books each containing only part of the data you need, the Aero Year Book will be a single complete volume for ready reference.

American aircraft products, services, operations and the individuals connected with all organizations; airports, Government aviation, aeronautical organizations and societies are some of the subjects covered.

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AERO DIGEST will award a prize of \$5 each month for the best humorous contribution published. Only those pertaining to the aircraft field will be considered. Address the "Picked From The Air" Department, Aero Digest, 220 West 42nd Street, New York, N. Y.

Pierre Allinio, El Cerrito, California, won the prize for November.

"WE"

The battered test pilot groped his way through the hangars, crying loud and long for vengeance.

Finally he cornered the Big Chief and demanded who built the crate.

"We did," mumbled the Head One. "Whereja get that Lindbergh stuff!" cried a voice from under a fuselage.

When a Man and Wife Make an Ocean Hop

(As the experience is visualized by the average husband)

FIVE HOURS OUT

She: Are we nearly there yet, Wilbur?

He: Don't be silly. We've hardly left the coast.

She (impatiently): Goodness! I thought surely we must be pretty near Europe by this time. How long have we been flying now?

He: Only five hours.

She (tartly): I know better. Your watch must have stopped.

He: My watch is all right.

She: It simply can't be. Five hours? Why, I know very well we've been flying at least half a day. I'm sure we must be close to Paris. I'm getting awfully thirsty.

SIXTH HOUR

She (fidgeting): Surely we must be near Europe, now, aren't we, Wilbur?

He: Listen, woman, we haven't completed one-fifth of the distance yet. And don't fuss so.

She: Well, my goodness, I just know you're wrong. Flying all this time and not near Paris? Why, it's silly! Are you sure your instruments are all right?

He: Yes, they're all right. We're about 600 miles out from the American coast.

She: Well, if I had any idea it was going to take all this time I never would have come. I think it's just awful.

He: You've gotta have patience. It's a long trip.

She: I've got patience, but if we're not near Paris by this time it must be due to your driving. Are you sure you haven't lost your way? Where are we on the map?

He (pointing on map): Right about there.

She: That's ridiculous. After all this flying we simply couldn't be way back there. You should take a sharp left turn now if we're ever going to get anywhere.

He: Oh, keep still, will ya? How can I drive if you're arguin' all the time?

SEVENTH HOUR

She: Isn't that Paris right ahead of us now?

He (fiercely): No! Certainly not!

She (petulantly): Well, something's wrong. Either your instruments are out of order or you've mistaken the route or something. You should have made a sharp turn back there about fifty miles.

He: Will you please keep still and let me run this machine?

She: That's right, shout at me like a big bully!

He: Who's shouting?

She: You are. It's the way it always happens when you go out for a plane ride. You spend all the time abusing me!

He (very exasperated): Now please don't start that line all over again.

She: Don't raise your voice like that!

He: Who's raising whose voice?

She: See! That's that same cloud we passed hours ago. You're off your route. You should take the next—

He (angrily): Say, whose driving this plane?

She (ironically): You are. That's the trouble.

He: Yeah. Well, if you'd keep your trap closed maybe I'd . . .

She (breaking into tears): That's right! SWEAR AT ME!

He (zooming down into the trough of a heavy sea): Aw-w-w-w!

EIGHTH HOUR

(Floating in their rubber suits 1,000 miles from land)

She: A fine mess of things you've made!

He: Oh keep still, will ya, ya backseat driver!

(Curtain)

—H. I. PHILLIPS. Courtesy of N. Y. Sun.

The Populous Blue

Come into the garden, Maud,
We can see airplanes careen,
And something may fall out, Maud,
And crack you on the bean.

—Florida Times-Union.

During a recent aviation meet, a professional pickpocket, who was locked up in jail pending trial, sent for the prosecuting attorney and begged to be released.

"But," said the lawyer, "you picked a man's pocket and, of course, you'll have to do time."

"Well, sir," replied the prisoner, "I suppose you're right, and to tell the truth, I don't mind the fact of being in jail, but Gee, it's h—I to be locked up here during this aviation meet, with everybody looking up in the air!"

—C. E. Jones.

Mr. Ford plans to operate an airplane Pullman. It'll be a serious matter then if the porter brushes you off.

—Nashville Banner.

Host: What do you think of these cigars? I got them from an airplane pilot?

Guest: What does he use them for—skywriting?

—London Opinion.

No sooner do our most famous flyers accomplish one long journey than they begin planning another. If they stay on the ground more than a few days at a time their feet begin to hurt.

—Detroit Free Press.

"Why is that plane all decorated?"

"Oh, there must have been another air-wedding."

"And who's that in the parachute?"

"Probably the bridegroom."

—Lustige Blaetter (Berlin).

If they begin dropping airplane cargoes by parachute, as is suggested, the pedestrian problem will soon cease to exist.

N. Y. Herald-Tribune.

In their climb to fame, few, except aviators, find it only one flight up.

—Virginian-Pilot.

An increase in air traffic may cause the advertisers to lay their billboards flat on the ground.

—Arkansas Gazette.

Winter Business

DWIGHT DAVIS of the Stinson Aircraft Corporation writes, *"I want to leave one thought in connection with aviation in general and that is that from all appearances we are going to have a mighty nice winter's business!"*

Winter is coming but the "winter slump" is old fashioned and out of date. Demand for aircraft will not permit it.

Manufacturers who can supply the aircraft industry with the supplies and service it needs are in a good position. They are selling in an active market.

AERO DIGEST which covers the entire aircraft field with a circulation of more than 36,000 copies per month (October issue 36,732) is the greatest advertising influence in the field.

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A modern, all metal hangar, 60 feet x 100 feet, recently completed. A well equipped field office with every modern convenience, including facilities for developing and printing of aerial maps and photographs and necessary equipment.

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Two brand new biplanes, perfect in every respect, of the latest and best make and design.

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Special aerial camera, especially designed and manufactured for company use.

This company has been operating and has several very valuable contracts for freight carrying, passenger flying and aerial work with different companies. A school for student instruction has been organized and is operating daily. The site has been established as a flying field for years.

Only principals need apply.

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NEW YORK CITY**

AIR—HOT AND OTHERWISE

(Continued from page 512)

and general public interest to hook up and, getting behind the fine idea of W. O. Saunders, president of the Kill Devil Hills Memorial Association, see to it that the enterprise which he so ably and so patriotically has suggested, shall be carried forthwith to completion. He is a noted character and able citizen. He should have the heartiest cooperation of all interested in our aerial progress and history.

The memorial should be speedily planned, approved, and financed. It should be of a magnitude and a design befitting the achievement which it will be created perpetually to celebrate.

What is the most fitting form that this memorial could take? Let every thinker in the Air Klan forward his suggestions to AERO DIGEST. Should it be a monument of sculptured art and decorative glory? Should it be a mighty beacon light to guide the navigators of the air who fly along our Southern Atlantic Coast, massive, utilitarian as well as sentimentally significant, impressive, in keeping with the grandeur of the achievement commemorated and the wealth, importance and progressiveness of the nation building it?

Last year Congressman Warren, from the district in which Kitty Hawk is located, put through the House a bill providing for the placing of a marker at the spot where the Wright plane was flown.

If AERO DIGEST can be of any service to him it will take its covers off, hitch up its brains and get busy on a job of real hard work.

THE Lindbergh tour of the country was one of the most impressive episodes in the history of aeronautics. This youth of solid and astonishing achievement, who, after he had flown the ocean, turned down offer after offer of great sums for dramatizing himself and, instead, has been doing since what he could do to explain and popularize aeronautics among his countrymen, has proved himself a record-breaking publicist as well as a record-breaking ocean flier.

Millions of people through the country saw and heard the Colonel and saw his famous plane, *The Spirit of St. Louis*, and its accompanying ship, in safe, fine flight, without stunting, the flight of both planes involved in the great tour (the second being a Department of Commerce escort ship) being reasonable as well as picturesque. It demonstrated definitely that planes of the best construction, kept in good condition and well handled are as safe a means of transport as motorcars or railway trains.

Every State in the Union was covered in the tour and the stops (all of them marked by great crowds) numbered eighty-two. Only once were weather conditions sufficiently unfavorable to affect progress—another proof of the advance of aviation. At Portland, Maine, a dense fog held the fliers back.

The freedom of the Lindbergh tour from accident was as notable as was that of Commander Byrd's, last year, after his return from the North Pole. If there are any timid souls among free born Americans they now should be reassured. Aviation, rightly managed and in the hands of competence, is as safe as canal-boating.

All interested persons are looking forward with great interest to the suggestions which Colonel Lindbergh presently will make for the promotion of commercial aviation.

His tour lasted three months and during its progress he flew 22,350 miles and visited 82 cities. His hours of flying

time were 260, he made 69 long and 13 touch stops and dropped 192 messages. These did not include those which fell from his modest but not shrinking lips, for the "Lone Eagle" actually made 157 speeches, all of them good. He did not overeat, although he was guest at 68 dinners, he returned in good physical condition though he flew almost as many miles as would have taken him around the world if they had been end on straight end, and, in committee motor-cars 1,285 miles on grand parade. Not less than thirty million people saw the Colonel and his plane.

The Department of Commerce plane which went with him flew 20,350 miles without the slightest mishap, so the total mileage flown without accident by these two planes alone was 42,700. Not a forced landing, not an overhaul, not a delay of any kind from mechanical causes marred the wonder-journey. Over difficult country without landing fields, and during many hours of darkness, these planes kept to schedule without fuss. The plotted airways were not followed and a quarter of the country covered was mountainous.

The Colonel was not even tired by his trip, despite the tales that he was "physically exhausted," and after it had ended passed a perfect physical examination.

In addition to the at least two million people who heard Colonel Lindbergh speak in person, other millions heard him upon the radio, for many of his addresses were broadcast.

The Ryan plane, in which the Colonel toured, was the original *Spirit of St. Louis* and the motor which propelled it was the original Wright Whirlwind which took him over the ocean on his historic flight to Paris.

From July 20 to October 23 the Colonel flew and rode and banqueted and spoke. What this tremendously dramatic demonstration has done for American aeronautics who can guess?

Just what the air mail gain will be, in the end, of course we cannot accurately know or ever really learn. Each day the Colonel spoke there was a gain in the sale of air mail stamps in the towns wherein he spoke, and probably some part of this will be retained. The air mail, as it stands, has slight cause for complaint, although it still is in its infancy. In April, 1926, it carried 5,296 pounds by contract and 28,509 in Government planes. In September, 1927, it carried 146,088 pounds in total, all of it by contract, none in Government planes. An increase in eighteen months from 33,805 to 145,088 pounds carried would seem reasonably satisfactory.

But to go back to Lindbergh for a moment, which is something that I always like to do. His tour was handled perfectly as an educational enterprise, and thanks to the splendid enthusiasm of the press, was thoroughly "put across." Therefore it has done real wonders. Tens of thousands who heard Lindbergh and saw him in the air have been stirred to real enthusiasm for aeronautics.

"They saw not only efficient but cheap air travel vehicles, not made especially but, as the motorcar ads say, "out of stock." The Ryan monoplane in which the Colonel flew is a \$13,500 model, and the Department of Commerce plane which accompanied him is a Fairchild stock ship listed at \$11,700. These achievements of stock ships should teach a lesson to the Army and the Navy.

Bill MacCracken, Assistant Secretary of Commerce for Aeronautics, understands the situation, and has declared that the three facts emphasized by the tour are:

"That it stimulated interest in aeronautics as has been shown by increased use of the air mail. That it obviously

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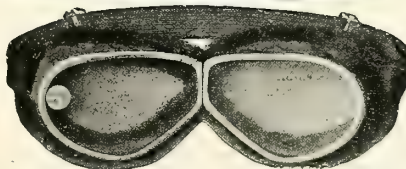
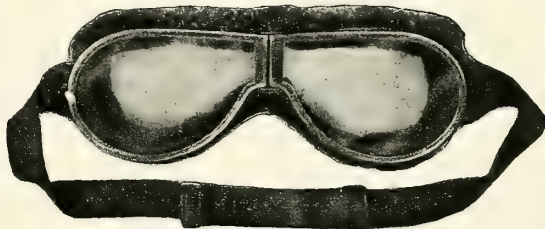
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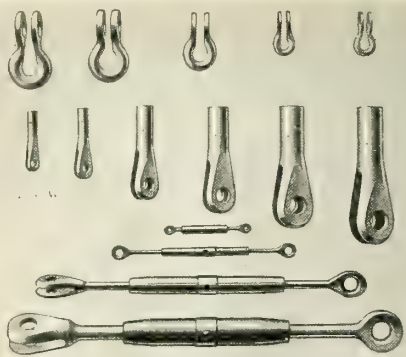
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has inspired municipalities to acquire and improve property for airports. And that the Colonel perfectly has demonstrated the reliability of present-day aeronautical equipment.

MacCracken says the people owe a debt of gratitude to Lindbergh. They do; and to the Daniel Guggenheim Fund for the Promotion of Aeronautics, which made the gigantic demonstration of air travel possible by paying all its bills.

ANOTHER service which the Guggenheim Fund is doing for American aviation is that unquestionably rendered and for the future very promising by the Safe Aircraft Competition. This concerns plane construction only, and that it will have the desired effect is indicated by the fact that five British companies already have entered planes, with two American entries actual and one promised. Of course there will be others from America during the allotted period.

Here is a practical effort to encourage study of that most essential of all attributes of a sane transport method—danger elimination. Hitherto all prizes have been offered for speed, altitude and other matters of the sort. Essential as such achievements may be, the public never will take up flying because it can go at unbelievable speeds or reach incredible heights above the earth, unless, also, it is reasonably safe. And reasonably safe means quite as safe as railroading and motoring.

The competition has many months to run, the closing date of the final contests being October 29, 1929, "or at any time before then when the object of the competition shall have been achieved." There is splendid optimism in that phrase.

Tests of the devices submitted in the competition will be made at Mitchel Field, where Major Howard Davidson, of the Army Air Corps, as field manager, will have the coöperation of Lieut. Col. Benjamin A. Foulois, that commandant of the field for whom AERO DIGEST frequently has expressed whole-hearted admiration.

The Guggenheim Foundation expresses the belief that the modern airplane is well built and seldom fails structurally, and that the air-cooled engine is reliable enough, but that the matter of aerodynamic safety characteristics has been definitely neglected.

Planes land at a speed too great and after landing must roll too far to make the average emergency landing field useful, and the average plane requires so much space for the take-off that again small fields lose value. Also, it is pointed out, few planes have been constructed which would not, on too slight provocation, go into spins.

The vast importance of the competition is indicated by the personnel of the selected judges: Orville Wright, F. Trubee Davison, Edward P. Warner, William P. MacCracken, Commander Richard Byrd and Dr. George W. Lewis. As technical advisers, Prof. Alexander Klemin of New York University, Lieut. E. E. Archer of the Massachusetts Institute of Technology and Major R. H. Mayo of London, will serve.

ANOTHER interesting development of the present general interest in American aviation is the suggestion of Dr. James H. Kimball, of the New York Weather Bureau, the man upon whose "yes" or "no" have depended all the transocean flights and attempts at flights which have been made from the Long Island fields. He believes material of pre-eminent value could be gathered if Lindbergh, Byrd, Chamberlin, Maitland, Hegenberger, Brock, Schlee

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1	Anzani, 3 cyl., 50-60 H.P. motor, unassembled, parts missing.....	75.00
1	Anzani, 3 cyl., 30-40 H.P. motor, unassembled, parts missing.....	50.00
6	LeRhône, 80 H.P. rotary motors, used, as is..... each	25.00
1	Standard J1, fuselage with controls, beautiful condition.....	200.00
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5	Curtiss, Model R4, fuselages, fine or multi-passenger ships.....	100.00
5	Curtiss, Model R4, tail surface assemblies, complete, uncovered.....	50.00
1	Aeromarine, 39 B wings, lower, 1 pair.....	100.00
6	LWF wing sets, never used, can be fitted to Curtiss R fuselages, complete set.....	150.00
6	LWF tail surface assemblies, complete..... each	25.00
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and Haldeman, or any considerable proportion of these men, could be got together for an open discussion of the weather that was predicted for them and the weather that they actually found.

These men who have had practical experience could meet at the proposed gatherings, according to Dr. Kimball's plan, as many weather experts as could accept the invitation, and the conference might be able usefully to interpret the combined experiences of all the fliers plus those of all the weather men, in a way more valuable than so far has been possible when one, or at most two, in each specialty have been able to discuss the situation.

Much of the matter published with regard to weather conditions met on transatlantic flights has been erroneous, according to Clarence Chamberlin. Nearly all the flying experts who have been questioned as to the merit of the idea are quite sure that such a conference would be astonishingly valuable.

WHAT TRANSATLANTIC FLIGHTS AUGUR

(Continued from page 517)

magnetic compass does pretty well, although they are always affected by the magnetic properties of the whirling masses of metal in the engines and other accessories.

When we first took up the problem of obtaining better compasses, it was suggested that the lines of magnetic force around the earth were similar to the lines of force thrown out around a wire carrying an electric current, and that if these lines of force were cut by another wire, a current would be produced in that wire. The principle is the same as that used in an electric generator, where loops of wire are made to cut the magnetic field between two magnets, thereby producing an electric current. After several years of experimentation, we found that we could take a loop of wire and so place it in an airplane that if we cut the lines of force of the earth's magnetism, this could be shown on a delicate galvanometer, the instrument which indicates an electric current and its direction in a wire.

In using the earth inductor compass in an airplane, when the direction of flight has been decided upon, the loop is placed with respect to the lines of force of the earth so that no current will pass through the coils, if the airplane holds its desired course. If a deviation happens to the right, the indicator swings to the right, or if to the left, it swings to the left. The only mistake that could result with this compass would occur if the airplane turned completely around and flew in a directly opposite direction, in which case the indicator would not show any difference because the coils of the earth inductor compass would be placed similarly with respect to the lines of magnetism of the earth. For instance, if we set our earth inductor compass so as to fly directly east, and instead flew directly west, it would show no change. Magnetic compasses are carried for the purpose of checking the inductor and of course they are sufficiently accurate for doing this.

In addition to finding his direction, another very important matter which Colonel Lindbergh had to take into consideration was the direction in which the wind was drifting his plane. This he estimated accurately from his long experience in the air.

With directional radio telegraph and with instruments known as drift indicators, the amount of drift which the wind imparts to an airplane can be accurately determined. The seaman or landsman always seems to think that the sextant and chronometer must be used for finding an airplane's position, if it happens to be over the sea, merely

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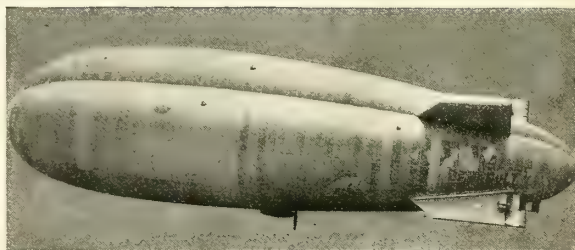
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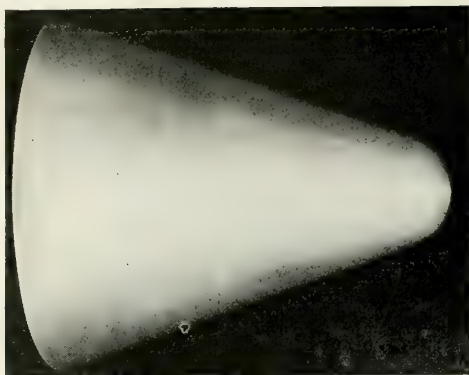
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because sea ships have to use such instruments in determining their position. The airmen know they are absolutely unnecessary, primarily because the airplane moves so fast that the errors in location are not so great as with a steamer and because the arc of visibility is so much longer than an airman a few thousand feet in the air can see almost as far as a steamer travels in a whole day.

The most difficult features of navigation are maintaining one's direction and balance in fogs, heavy snows or when the night is very dark and there are no stars or moon. If there is no horizon line visible, the pilot has no means of telling whether he is flying horizontally or upside down. This is particularly so over water, in a fog, when the impression which is conveyed to the pilot is very much the same as if he were on the inside of a sphere painted gray.

Gyroscopic instruments to indicate horizon were used by Lindbergh. The gyroscope is like a top; if you spin it fast enough it will hold a certain position as long as the speed is maintained. In Lindbergh's turn and bank indicator is contained a small gyroscope which revolves at the rate of about 22,000 revolutions per minute, being actuated by an air stream brought in through a tube carried on the wing. This little instrument showed him when he turned to the right or left and whether he was carrying one wing higher than the other. It was the one thing that helped him fly through the black night, through the fogs and the sleet storm.

Gyroscopic devices, however, have been developed and are practical which can be made to handle the controls of an airplane, keep it in steady horizontal flight and direct it straight for the point to which it is desired to go. These devices are known as automatic pilots. They were invented and used in America and brought to a great state of perfection by one of the world's greatest aeronautical minds, Lawrence Sperry, who unfortunately was killed in an airplane accident. This device can be used in commercial airplanes, to fly them straight through storms, fogs, rain or snow.

Another important thing is the weather service, to ascertain weather conditions over long stretches of land or sea. There is nothing difficult about prognosticating the weather thirty-six hours ahead of time, telling the approach of storms, their diameter, their rate of progress and their character. In case of regular transoceanic travel, an excellent service could be established. Few people realize that most storms go up as high as the atmosphere will hold moisture, which is about 55,000 feet, and therefore with the flying machines we have at present it is impossible to rise above them, consequently we have to go through them or around them. Airplanes of course can receive weather reports by radio telegraph, no matter where they may be.

A very necessary device on an airplane is one that enables the pilot to tell how far the earth or water is under him. The ordinary instruments now used to indicate altitude are barometers which measure the column of air over the plane, not how much air there is underneath. But new instruments are being perfected which are electrical and depend for their action on the principles of an electrical condenser. It will be remembered that the plates of a condenser hold more or less electricity in accordance with the distance between them. If they are close together, they can hold more, if they are far apart, they hold less. The instruments that are being perfected now may be said to use the earth as one plate of the condenser,

the other plate being carried in the airplane, and by carefully measuring the amount of the electricity in the plate in the airplane, the distance to the earth down to tens of feet can be told with great accuracy and speed. An instrument of this kind is extremely necessary for flying over sea, through heavy fogs and over mountains.

Experiments are being developed which will automatically show an airplane's exact position and height at any time. The airplane has an air speed indicator on it which shows its speed through the air. From this is made a record on a moving piece of paper, which moves in accordance with the speed of the airplane. The direction of flight is indicated on this same paper by the compass, and the altitude instruments can be made to record graphically how high the airplane is flying. With a device of this kind, all that a pilot has to do is to sit still and look at his map, and the line on the map will tell him just where he is at any time. The only allowance that has to be made is for the drift due to the wind, and this can be checked every hour or two by directional radio and corrected.

Lindbergh took a tremendous chance in flying across the ocean because he had only a single engine in this airplane, and because he had no radio telegraph to call assistance in case he went down, or to locate himself in case his instruments did not work. Although he did not have automatic instruments to fly his plane through the fog, the night, and the storms he met, he made up for this by sheer ability and understanding of air conditions.

In a passenger liner of the future, we can neutralize the dangers of these conditions with automatic devices, and guide the airplane with safety and regularity, much the same as a railroad train is directed along tracks. Instead of their being of metal and part of the earth, our aerial rails will be electrical and the devices that strap us to them and hold us on our course will be the gyroscope.

To-day we can build airplanes suitable for transatlantic and transpacific flight. They will cost a great deal of money, which private individuals or companies cannot afford to put out, either from a standpoint of financial outlay or in the economic benefit to be derived. The time is not far distant, however, when these things will be more or less commonplace.

Let us see then what an airplane such as this may be like. To begin with, it would have one large single wing, made of metal and water-tight. It would be two hundred or more feet long, fifty or sixty feet wide, at its widest point, and eight or ten feet thick. The power plant would be on the center line; in other words, a regular engine room much the same as in ocean liners. The engines, eight or ten in number, would be driven by gears operating on a central propeller shaft. This shaft would actuate one big propeller, thirty or forty feet long, which would revolve at comparatively slow speed and project way beyond the structure of the airplane so as to seize the good still air with which to pull itself forward. This air would be free from interference in the slip stream, the air that runs back from the propeller, as distinguished from the slip stream of the little toothpicks of propellers one sees on the present transatlantic airplanes, where nearly all the space behind the propellers is taken up by engine or plane wings. The tractive efficiency of these little propellers is only about fifteen per cent of the power used. On the large planes, an auxiliary propeller could be carried in the rear of the airplane, and folded into the trailing edge of the wing, which could be thrown into gear in case anything happened to the front one.

(Continued on next page)

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The pitch of these propellers, that is, the angle which the blades make with the line of the propeller shaft, should be variable so that while the airplane is in motion they could be set for rapid climbing or for the greatest amount of speed in a horizontal direction.

The landing gear on an airplane of this kind should consist of wheels or revolving surfaces ten or fifteen feet in diameter, which could roll right over the ordinary fence or ditch without inconvenience. Shock absorbers can be made for these wheels which will enable an airplane to fly on to the ground at a speed of one hundred miles an hour and still sustain no injury. These shock absorbers employ much the same principle as the recoil mechanism used on great cannon, to prevent their breaking their carriages all to pieces. This landing gear could be either folded up in flight, which would increase the speed from ten to twenty per cent, or it could be made in the form of a caterpillar and act both as a float on water and a landing gear for use on land.

Passengers and crew would live and work inside of the wing of such a plane. It would be completely equipped with radio and the gyroscopic devices that I have mentioned. Airplanes of this kind have been designed by some of the world's eminent aeronautical engineers and are merely waiting for the time when sufficient finances can be obtained for making them. European engineers who have designed them are Dornier, the Breguet Brothers, Junkers and Rohrbach, while the American engineers, Verville and Barling, prepared complete specifications in 1923 for an airplane of this kind.

These Atlantic flights do show one great thing, how-

ever, which is that the air torpedo, or airplane controlled and piloted by gyroscopes, can be made to shoot directly from Europe to America. These air torpedoes could be checked by means of radio on their course from continent to continent, by submarines or dirigible airships. Shots can be fired from England, Germany, France or even Russia that would hit New York with cargoes of gas or explosives. Shots were fired several years ago under my direction with great accuracy at a distance of 134 miles. The length to which these air torpedoes can go is limited only by their gas and fuel capacity.

There is one decided lesson which the American people should learn from all that has transpired in American aviation. It is that national aeronautics should be removed entirely from the control of the Army and Navy, and should be handled by a Department of Aeronautics, entirely separate from these other services, such as every civilized country in the world has to-day.

THE AMERICAN GIRL

(Continued from page 515)

appearance of the tanker was providential. News of the rescue was somewhat delayed and by the time it reached centers of telegraphic distribution the world had begun to think Ruth Elder and George Haldeman were lost.

The rescue ship landed the airwrecked adventurers at Horta, in the Azores Islands, unharmed, but of course disappointed. Miss Elder and Captain Haldeman alike showed the finest kind of sporting spirit and the aviatrix announced that she would try again to fly the Atlantic.

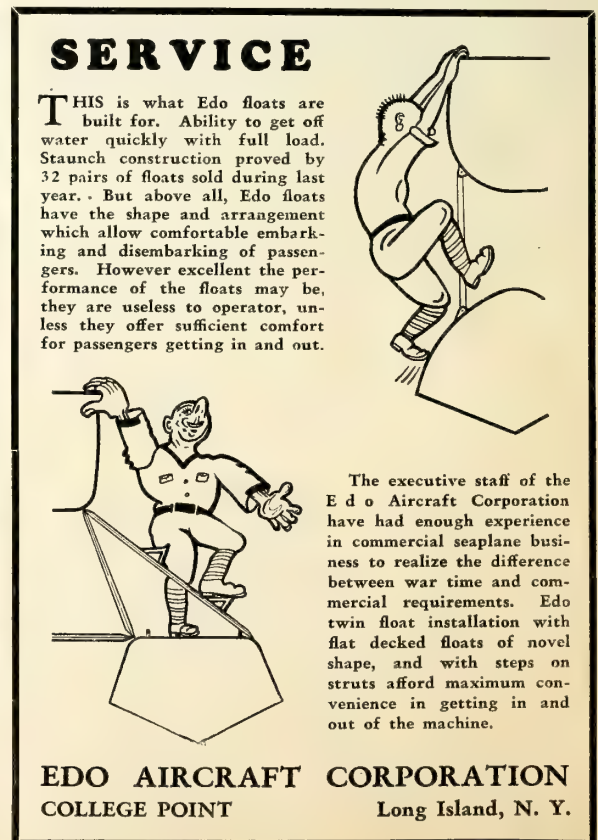


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A NOD AND A WINK

(Continued from page 520)

is the plodding old battleship, tied up to a wharf.

The sad truth of the matter is that the Navy and old Bishop and my grandmother are right—we'd be happier if we could stay just as we are. Only, we can't. Others go on, and we have to keep pace, whether we want to or not. Grandmother didn't speed up—but a Mack truck did. There you are; there's a lesson in that for the Navy. Mr. Wilbur, remember grandma; remember the Mack truck; remember the *Maine*.

OVER the South Downs of Sussex, England, sped a French airplane. It bore no registration mark; its motor was muffled. Like a homing pigeon it circled, landed on the Downs, the home of ancient smugglers, paused a few minutes, then rose again and disappeared in the direction of France. It rose easily, for it had left its load behind—a load of silks and brandy on which no customs duties had been paid, nor ever would be paid, for that load was hidden at once by the descendants of those ancient smugglers.

During the war an old F. E biplane landed at Lympne. It had just come from France. In it was a case of French brandy, and me. The brandy and I scuttled into a nearby hangar, and were seen no more that day.

Times change. But human nature remains the same.

IT is reported that twenty chemical plants in Russia are making poison gas, possibly for export to Germany, who is not allowed to make poison gas. England would welcome the prohibition of gas in warfare. So would France. So would the United States. So, very probably, would the gentlemen who are to be gassed in the next war.

But poison gas won't be prohibited. And if it was prohibited, those who had agreed to fight without it would forget that they had agreed, and would use it anyhow. So why prohibit its use? It will not be shot from shells, as was done in the last old-fashioned war. It will not be used on soldiers in the line, for the wind may change and it might blow back to the senders. Besides, all soldiers have gas-masks. The people who will sniff that gas, or some like it, will be civilians back of the lines, hundreds of miles back. The workers in factories, people in cities, mothers and children in the homes, will have their ration of poison gas delivered to them—by airplane.

WHEN the Army washed out the old Jennies in September they left Mitchel Field with exactly eight airplanes, four of which were DHs. There were thirty pilots to fly these eight planes—and 600 mechanics to act as an audience. And that was the total air defense of the great city of New York.

You may think that's a joke, but it isn't. It's a fact.

THE boys find it hard getting in enough time to enable them to qualify for flying pay. My friend Lieut. Turner only got in 30 minutes in three weeks in September—I don't know how he finished up the month. All that flying must be hard on the nerves.

The balloon pilots have solved the problem of securing the needed four hours' flying time. They get in the cabin of a blimp, or the Los Angeles, let the bag float up to the roof of the hangar—and play bridge for four hours. They keep the hangar doors closed so the gas-bag won't drift outdoors with them aboard. *(Continued on next page)*

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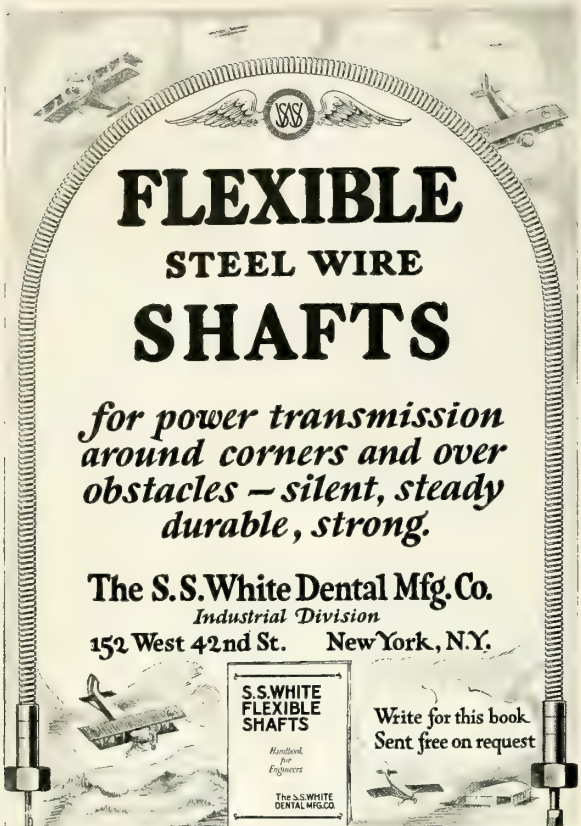
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I guess Curtis D. knew what he was talking about when he said that our best defense against enemy airplanes was the Atlantic Ocean. Really, we have very little else.

I WAS talking to John G. Smith, secretary of the Aeronautical Mechanics Association of America, Garden City, Long Island, recently. He tells me that the mechanics' association now has over 500 members, banded together for the interest of aviation, and incidentally—or perhaps primarily—for the interest of the mechanics. It is the aim of the association to become the voice of the aero mechanic at all conferences where aircraft regulation and laws are being discussed.

Now this seems a fair and worthy aim to me. Speaking as a pilot who is not much of a mechanic, I want to say that I owe a debt of gratitude to the air mechanics of the United States, Canada, and England for the twelve safe and pleasant years that I have flown as a pilot. Without their careful and expert work on planes and engines, I certainly would not have flown with the safety that I have enjoyed. I am glad to acknowledge my debt to them—especially to my good friend Harry West who looked after my old 160 h.p. Beardmore for ten long and worrisome months of night-bombing in France. If Harry hadn't looked after me, and nursed that old Beardmore, I don't think that I'd be here now. And I am sure that if I had been forced to wander across the lines with an engine which received no more expert attention than the pathetic amount which I could give it, I would have been even more worried than I was—if that was possible.

So I'm glad to see the boys getting together, to help themselves and to help aviation. For it will help aviation. The association aims at higher class mechanical work on aircraft by putting into effect a plan for the education and information of its members. It is also putting into effect a plan to keep its members employed, and to provide for compensation for injuries or death.

I believe that we pilots, who owe much to careful and conscientious mechanics, should do all we can to foster and encourage this association of the men who make our way safe in the air.

WE end on a note of stark tragedy this month, weeping bitterly. A Monsieur Duval, of St. Opportune, France, stretched himself on a grass plot near a railroad station to wait for his train and read his paper. When, after half an hour, he boarded the train, he was suddenly conscious that he was being bitten by insects on about half the surface of his body. Investigation disclosed that he had collected the whole population of an anthill, whose inhabitants, evidently somewhat annoyed at their change of residence, were attacking him.

Frantically he removed his trousers, and shook them vigorously out of the car window—just as the train crossed a bridge. Monsieur Duval caught one fleeting glimpse of his trousers, as the legs thereof wrapped themselves around a bridge girder. Then he saw them no more, for the train sped on, and stopped at a station. What Monsieur did see, however, was a lady entering the compartment, followed by another lady. The unfortunate traveller took one glance, then tried to crawl under a seat. Alas! The effort was vain. The outraged ladies called a gendarme and had Monsieur Duval arrested.

The moral of this tale, of course, is to travel by airplane. You avoid all the bridges.

EDITOR'S NOTE: We are pained, hurt, and grieved to announce that Cy Caldwell, whose mysterious disappear-

ance we announced in our October issue, still is missing. We are greatly concerned, for we fear that the well-known semi-writer and partial-pilot, who was seen last in the company of a Broadway chicken, has met with fowl play. This article was mailed—post-marked "New York."

"If he is gone for good," said Mrs. Caldwell, "his take-off will be a loss to me. And the loss is only partly covered by insurance."

The way that aviation enthusiasts have disappeared lately, either in oceans or in night clubs, worries us. We have retained the services of the Punkerton Defective Agency, whose clever work in locating an air-minded admiral recommended them to us. The admiral they found was named Sims. But the Navy also found that he was air-minded, and immediately retired him as a dangerous explosive. He was the admiral who said that in the next war the Navy might as well park all their battleships in the Mississippi, in the interests of safety.

The man who found Sims was that star detective, Operative 7-11. His work in the Caldwell case is covered by the following reports:

Times Square, New York, Oct. 15.—Endeavored to trace Subject in various speak-easies in this district, and secured the services of a Prohibition officer who knows all the places intimately. Went with him on his daily rounds collecting *backsheesh*, and didn't miss a single dump. They all paid.

Finally trailed a man whom I suspected to be the Subject, and followed him for three days. He kept running into and out of newspaper offices, posing for his picture beside an African honking gander—to which he bore a startling resemblance—and often patted little girls on the head. But my three days were wasted, for he turned out to be Daddy Browning.

Enclosed bill of expenses, covering attendance at night clubs, \$432.75, is self-explanatory.

OPERATIVE 7-11

Greenwich Village, in the heart of the slopping district, New York, Oct. 19.—If you could supply me with a photograph of Subject it might aid my search. Here I've been chasing a bird for three more days under the impression that he was Caldwell. This bird went dashing through stage doors, hurling large quantities of money at stage people, and then rushing to night clubs, whose hostesses invariably informed me, "He is just a friend, that's all."

If I had known more of Caldwell's habits I'd have known that he never threw even a thin dime at anyone. As it was, I chased this Dickie bird until I wore out my stomach. It's very hard on an Operative working the night clubs. My expenses, enclosed, amount to \$543.65. The doctor's bill of \$75 is for repairs to stomach and vulcanizing kidneys.

OPERATIVE 7-11

Dust Field, Garden City, Long Island, Oct. 21.—As Subject was interested in aviation I thought that he might have come out here, so I spent the best part of a day and 72 cents coming from New York. It's only 23 miles, but they need Pullmans on this line. This is New York's favorite airport, but actually you could land at Philadelphia, catch a train for Pennsylvania Station, and arrive there a day sooner than if you landed at Garden City and came in on the Long Island. This road is God's gift to anyone who loves to sit still for hours and breathe cinders.

I thought Subject might be investigating conditions, but a Mr. Merrill informed me that conditions had been investigated regularly for the last seven years without anything coming of it. He said that a man like Caldwell wouldn't waste his time investigating on a warm day, but would likely be at Bert Acosta's hangar with a perspiring glass in his hand.

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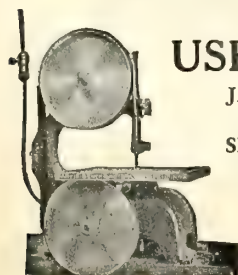
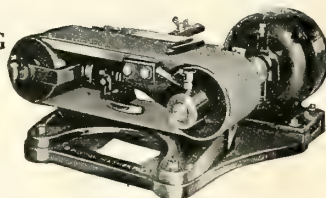
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I searched around between the hangars at Dust Field in case Subject might be hiding under some of the airplane wreckage stored there. It's a funny thing, but that's what they use the space between the hangars for—to store bits of crashes as a sort of advertisement of the thrills of flying and to act as conductor of fire from hangar to hangar. It's a peculiar custom that only the air-minded can understand.

Another queer thing is that the pilots run up their motors with the ship's tail aimed directly at the hangars, so all the dust blows inside.

‘It's the custom,’ I was informed.

I searched the dust clouds well, but found no trace of the Subject, though he may have been there. Sixteen children were lost in the dust that day—if you ever mislay a child on that field he's gone until the next rain washes him up.

I enclose expense account of \$12.80. You get off light this time. The \$2.00 is for cleaning suit; the 50 cents is for throat gargle; the \$5.00 is to repair tooth after that lunch counter steak. Searching for this aviator is kind of breaking me up. These birds seem to live a tough life. No wonder there aren't any fat pilots.

OPERATIVE 7-11

P. S. Saw Rene Fonck out here. He had mislaid his steamship ticket, but found it again. If he ever lost that ticket he'd never get back to Paris.

7-11

Operative 7-11 is using all his skill to unravel the mystery of Cy Caldwell's disappearance. We hope to have a solution of the mystery when next we go to press. Meanwhile, Mrs. Cv is watching day and night. Cy left a gallon of gin behind, and she feels confident that if he is still alive, he will return.

WEATHER CONDITIONS ON MY FLIGHT

(Continued from page 513)

radio our whereabouts back home, and checked our course by her wake but the *Mauretania* was not as vital to the flight's success as is generally supposed.

Reference is made by Ramsey and Kincaid to the slow time made by the Bellanca across the Atlantic in comparison to Lindbergh's showing whereas a study of the facts in the case will reveal that our average speed over the ocean was virtually the same. Where the Bellanca lost time was in battling head winds up the coast to Newfoundland; on the ocean flight she made 2,300 miles in 21 hours. A test of the actual speed of the *Columbia* and the *Spirit of St. Louis* under varying load conditions might change a lot of preconceived notions about the relative fleetness of the two planes.

Returning to the Ramsey-Kincaid weather chart of the Bellanca's flight we find a low pressure area over northern Scotland. Evidently the writers did not avail themselves of weather maps for the 6th of June which were made in Europe by meteorologists who had conditions there under their close, personal observation. If they had they would have learned that the low in question had taken matters into its own hands and moved down over the center of Germany. But they wrote:

“As he (Chamberlin) proceeded along his route during the night of June 5, passing over southern England and the coast of France, he reached the end of the good weather area and ran into a little less favorable condition than he experienced over the ocean, due to lower visibility and a little rain. During this period of darkness, he was hindered in recognizing points over which he was passing and was prevented from reaching Berlin.”

It seems clear that our two weather experts are again

of the opinion that "Chamberlin kept close to the surface." How disabused of that notion they would be had they only made the flight with us instead of staying at the United States Naval Institute, Annapolis, to write expertly of what happened over Germany on the night of June 5!

We began to encounter thick weather after passing Lands End, England, and Plymouth was the last place we saw as the Bellanca started climbing for her second night above the clouds. Ordinarily it should have taken five hours to reach Berlin and the fact that it was ten instead before we came down at Eisleben not unnaturally has led to the impression that we were hopelessly lost. The truth of the matter is that we climbed to an altitude of 21,000 feet trying to get above the endless masses of fog ahead of us and that we lost our time and fuel weaving in and out of cloud "valleys" trying to find low places through after the Bellanca had reached her ceiling. Curiously enough while the fog was solid over land there were great open gorges above the English Channel at the bottom of which we frequently saw lighthouse beacons on the coast. We covered a lot of unnecessary ground that night but the fact that we came out over Dortmund, almost directly on the course to Berlin, next morning when it was daylight and we dared go down through the stuff, ought to convince any fair-minded person possessed of a map that we managed to keep a fairly close check of our wanderings even though the "experts" say I was "without navigational equipment." Fortunately we came through the ceiling into a valley instead of over the cloud-wrapped hills. Our map of Germany inadvertently had been left in New York but the airdrome attendants at Dortmund pointed east when we flew down and inquired the way to Berlin. From then on we flew "by guess and by gosh" but managed to make knots on the gas left and landed pretty well in the direction of Berlin when the motor quit running.

The question may be asked why we went over the thick weather encountered at night instead of trying to go through or under it. The answer is simple. I didn't dare.

Our earth inductor compass had "gone out" soon after the start and we had left only a cheap, old-fashioned magnetic compass. This was mounted not on the instrument board but in the top of the plane above and in front of our heads. (Ramsey and Kincaid seem to think we had only one compass but are wrong.) There may be pilots who can fly "blind" without having all their instruments properly grouped on the dash in front of them but I profess no such skill. I believe a plane which intends to attempt such flying should have two pilots capable of flying "blind" indefinitely by their instruments and certainly the Bellanca did not have that. On top of the clouds we had a definite horizon; in or under them we would have had nothing and doubtless would have come to grief. For that reason we jockeyed with the cloud pinnacles that were above the Bellanca's ceiling, losing time, distance, energy and gas (the motor was at full throttle three of four hours trying to get over the fog) rather than risk going down into it until daylight would give us a chance coming through the ceiling below.

Right here I would like to say that aside from the faultless performance of our Whirlwind motor I attribute the success of our flight to the fact that at no time was the Bellanca loaded to capacity; a statement amply borne by the high ceiling she was able to attain during the first night and by her average gas consumption for the entire trip of ten and a half gallons per hour.

No doubt some of the less glaring errors in the Ramsey-Kincaid analysis of the Bellanca's flight have been overlooked here. But enough of them have been pointed out

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to show the good that might be accomplished if a really informed analysis of this year's ocean flights could be made by the fliers who actually encountered transatlantic and transpacific weather and by the meteorologists who were of invaluable assistance in predicting it in advance for them. In our own case I know that virtually everything turned out as Dr. Kimball predicted except for the low pressure area over northern England and Scotland. On that he said the chances were it would move northeastward out of our way but that it might go southeast instead. The latter guess turned out to be right. Even a Navy hydrographer, I think, can understand the difficulty of recognizing points over which you are passing when you happen to be separated from the landmarks in question by 20,000 feet of fog.

NEW METALS FOR AIRCRAFT

(Continued from page 522)

speed military airplanes. On this class of planes wood is used almost exclusively for wings.

There have been no new developments in metal for wing structures since duralumin was invented in 1909. No other light weight alloy has been developed that surpasses it in its adaptability to wing structures. All development work in metallic wing sections has been in design, not in material.

There has been a remarkable development in aircraft engines in the past five years. This development has been along two lines; a reduction in weight per horse power and an increase in life and performance. Five years ago the average engine for military aircraft, without fuel, oil and water, weighed about two pounds per horse power. Today the average engine weighs approximately $1\frac{1}{4}$ pounds per horse power. The reduction in weight alone amounts to more than 35 per cent. In addition the life and performance has been greatly increased.

The increased efficiency of the aircraft engine has been due to development in engine design, and to research and resulting improvement in metals. Light weight alloys of aluminum are used wherever possible in aircraft engines; among the important parts made of these alloys are pistons, crankcases, exhaust manifolds, housings, and numerous small castings. In the air-cooled engine the cylinder head is also an aluminum alloy casting.

The alloy duralumin already mentioned in connection with wing structures is also used for engine parts. In addition to duralumin there are two important light weight alloys of aluminum, developments of recent years which are used extensively in aircraft engine construction. The first alloy, known familiarly as the "piston" alloy, contains 88 per cent aluminum, 10 per cent copper, about $1\frac{1}{4}$ per cent iron and $\frac{1}{4}$ per cent magnesium. A small amount of silicon is also present.

The second alloy is known as the "Y" alloy and is composed of 92 per cent aluminum, 4 per cent copper, 2 per cent nickel, $1\frac{1}{2}$ per cent magnesium and small amounts of silicon and iron.

These two alloys may be much improved in properties by heat treatment. By a process of treatment that in many ways resembles the "tempering" of steel the "piston" and "Y" alloy are made much harder and stronger. A valuable characteristic of these two alloys is that they retain this strength and hardness at comparatively elevated temperatures much better than any other known alloy of equal weight.

As a result of these valuable characteristics these two alloys are the best for pistons and air-cooled cylinder heads,

which in normal operation in aircraft engines attain a temperature of 450 to 550 degrees Fahrenheit. Next to duralumin the perfection of the "piston" and "Y" alloy is one of the most important recent developments in metals for aircraft. In fact, without these two alloys the air-cooled radial engine would not have reached its present state of perfection.

A new series of light weight alloys are now under development for aircraft engines. These are the magnesium alloys. The most common one contains 95 per cent magnesium, 4 per cent aluminum and about $\frac{1}{2}$ per cent manganese. A small amount of iron and silicon is also present. Magnesium alloys weigh approximately two thirds of the common aluminum alloys, and in the form of castings their strength is about the same.

In the present state of the development of magnesium alloys, it is not possible to increase their strength by heat treatment hence their application has been limited. Experimentally they have been made into pistons and cylinder heads, but it is somewhat doubtful if they will replace the standard aluminum alloys now used, at least not in the near future.

In the aircraft engine the alloys of magnesium have been used successfully but still experimentally, for crankcases, exhaust stacks and supercharger castings. The saving in weight with these alloys is considerable; a magnesium alloy crankcase reduces the weight of a water-cooled engine $3\frac{1}{2}$ per cent, a substantial saving.

NEW METALS FOR THE PROPELLER

In recent designs the metal propeller has almost entirely supplanted the wood propeller. The alloy used for propellers is a form of duralumin and contains 94 per cent of aluminum, 4 per cent copper, 1 per cent silicon and $\frac{1}{2}$ per cent each of iron and manganese. This alloy has been the standard material for propellers for several years. Recent improvements in the metal propeller have been of design rather than material.

The magnesium alloy mentioned in connection with the airplane engine, is a prospective propeller material. Already experiments have been made with this alloy. The alloy is much lighter in weight than any of the alloys of aluminum, and has a higher weight-strength ratio. In other words a propeller made from the magnesium alloy would be stronger than an aluminum alloy propeller of equal weight. This would permit the use of larger and stronger propellers without increasing the weight.

SANTA CLAUS COMES TO THE AIR CORPS

(Continued from page 511)

was largely accidental and continued more or less in sufferance on land which it did not own. Certainly no permanent building could be done by the Army on such a site. Facing this fact Dayton hustled and the 5,000-acre gift materialized.

There can be no doubt that the location of the headquarters of the Materiel Division at new Wright Field eventually will prove to be a commercial boon to the Ohio city. But materialistic motives alone cannot be ascribed as the reason for this generous act. The casual visitor to Dayton still finds in the citizenry there a twenty-four year old sense of regret and chagrin that when the Wright brothers first were ready to try their fortunes in the air they had to journey all the way to Kitty Hawk for the proper setting. Looking back on that incident it appears that the people of Dayton have decided that that slight to Dayton shall not occur in the future.

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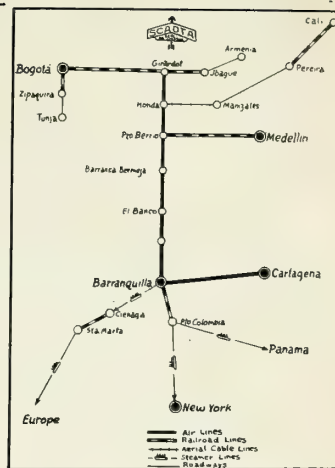
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ARE WE AIRWORTHY?

(Continued from page 514)

Providing the proper safeguards for interstate air navigation has presented many new and interesting problems to the engineering and legal professions. The aircraft en route from New York to Chicago, with its passengers, mail, and express, differs from the railway train bound for the same place, only in speed and the supporting element. The station becomes the airport; the train dispatcher the operations officer; the way station agent corresponds to the emergency landing field attendant; the round-house becomes the hangar; and the block signal system of the railway is analogous to the ground panel signalling system, just coming into use on some of our airways. Having no rails to guide it, the aircraft traverses an airway, which word, being too new for the dictionary, may be generally defined as an established, identified route, traversed by aircraft and with facilities provided for convenient, safe and economic air traffic. Like a ship at sea, the modern airliner is equipped with radio, not only to report its progress but to learn of weather conditions ahead, which may require a slight change in the course to be navigated, or if threatening, a temporary landing at the nearest airport. The compass and other special instruments indispensable to safe navigation enable the pilot to proceed even though the landscape below may be obscured by clouds or darkness. Beacon lights, both revolving and fixed, identify the path between airports at night, and upon approaching a destination or other required stop, the landing area is distinctly outlined by vari-colored weather-proof electric bulbs. Upon proper signals this airliner glides down from the darkness, to land gently on an airdrome made light as day by a 500,000,000 candle power diffusion light. Passengers and their baggage, again on *terra firma*, are whisked away in waiting motor coaches to hotel, railway, or ocean liner, if necessary, to continue their journeys by these means. The plane in the meantime is taxed into its hangar where skilled mechanics, with tender solicitude, treat it as a thing possessing life. The consideration given to their planes by two of the round-the-world fliers amounted almost to devotion, and was admittedly responsible for these pilots' noticeable lack of trouble due to mechanical malfunctions.

Passengers flying along a well-equipped airway in such an airliner, with conveniences installed comparable to railway travel, have less to fear from collision or accident than when behind a speeding locomotive, or the driver of a skidding taxicab. Aircraft, equipped with navigation lights conforming to the standard employed on the high seas, are readily discernible in darkness. Both pilot and assistant pilot are on the alert for approaching or overtaking craft. Here again, rules of the air are in force and, due to the almost unlimited choice in altitude and deviation along a horizontal flight path, the possibility of even sighting another plane is very remote, though its schedule and approximate location are known.

With specially prepared maps and facilities for dissemination of meteorological data needed for aerial navigation now being perfected through government aid, and with proven dependability of new aircraft engines, the forced landings of by-gone days have been practically eliminated from well-managed commercial air transportation. However, should it become necessary to make an unscheduled landing, along an airway at frequent intervals are intermediate landing fields marked to make their location easy, and equipped with proper facilities for night landings. Wheel

brakes, now used on airliners, have reduced the required landing area to about one-half the distance formerly needed. Other improvements have placed the modern airliner far beyond its wartime progenitor, of which the less said the better.

The failure of attempted freakish aircraft performances, wherein both engineering standards and common sense are sacrificed by so-called "crack pilots" for self-glorification, have no more bearing on aviation's true mission than has one of Will Rogers' non-stop diplomatic flights on our national jurisprudence.

Equally significant and indicative of the hazards peculiar to different requirements in aviation, is the record of one commercial aircraft operator whose planes have flown 4,500,000 miles without a passenger fatality (equivalent to 173 times around the earth), while fatalities in the military services (U. S.) have averaged one per 273,510 miles of flight. The exacting requirements of the latter, in testing experimental devices and new equipment, instruction and formation flights in military tactics, and securing performance data on heavily laden planes, create conditions that do not occur in commercial flying conducted to schedule day after day, along the same routes, with standardized planes of proven performance, and with reserve planes held in readiness at either terminal for replacement of equipment needing minor adjustment. Pilots of commercial aircraft also enjoy a greater freedom from responsibility and fly with greater regularity.

We read much of the subsidized commercial airlines of Europe, and statisticians have a penchant for quoting figures on the number of passengers carried by foreign airlines, but little is said of the commercial aviation in the United States, which, without subsidy, is establishing itself on a firm economic basis.

The development of air transportation, since the close of the World War, has made substantial progress, surpassing relatively the early development of water, rail, or automotive traffic.

With the Department of Commerce establishing, charting, and safeguarding civil airways, restricting air commerce to airworthy planes, and requiring operating personnel to hold airman's certificates, our capricious fears of flying will disappear and public confidence, elevated above the horizon of its own misgiving, will proclaim air commerce, and demand that the airplane's birthplace shall no longer repudiate its utility.

SAFETY IN AIR TRANSPORT OPERATIONS

(Continued from page 516)

purpose. These will soon be completed, but it is not likely that the company will hasten the recommencing of passenger business first because of the responsibility and second because it is not a good paying proposition in itself. During September a grand total of 5353 pounds of express and 53,680 pounds of mail were carried.

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The air lines have arrived to stay. Vigilance is enabling them to "get away with it," longer and longer between accidents. Radio beacons and other improvements will help immensely, but vigilance, knowledge and system will always be the keynotes of safety in air transport.

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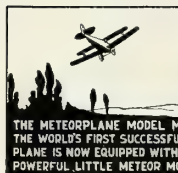
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State of New York, } ss.
County of New York, }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Frank A. Tichenor, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the AERO DIGEST, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Aeronautical Digest Publishing Corp., 220 West 42nd St., New York, N. Y.; Editor, J. E. Horsfall, 220 West 42nd St., New York, N. Y.; Managing Editor, None; Business Manager, Frank A. Tichenor, 220 West 42nd St., New York, N. Y.

2. That the owners are: The Aeronautical Digest Publishing Corp., 220 West 42nd St., New York, N. Y.; Abram Horsfall, Martinsburg, West Virginia; J. E. Horsfall, 220 West 42nd Street, New York, N. Y.; Frank A. Tichenor, 220 West 42nd St., New York, N. Y.; G. D. Wardrop, New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Signed) FRANK A. TICHENOR.

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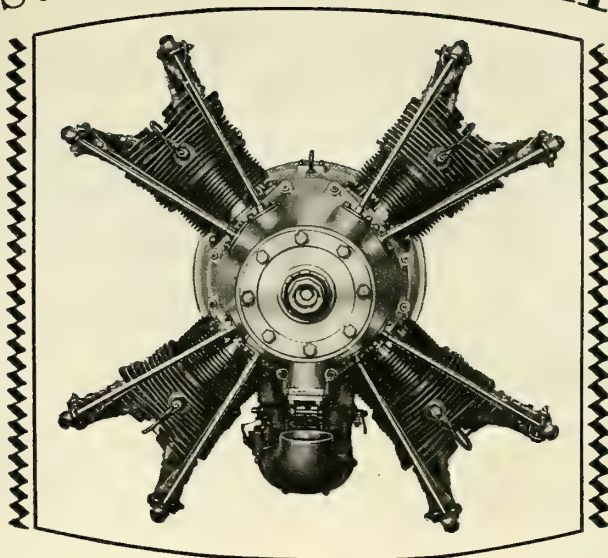


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AERO DIGEST

Vol. 11 No. 6

THE MAGAZINE OF THE AIR

DECEMBER, 1927

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*Orville Wright flying over Fort Myer,
Virginia, on the first demonstration flight for the
United States Army in 1908*

THE ARMY'S FIRST AIRPLANE

By Carl H. Claudy

THERE is drama in the old clippings! The world has seldom seen a more nervy act than that performed by Orville Wright, when he flew for the first time sitting up in an untried machine, never having had any instruction from any one, and with only seven minutes total previous experience in the air in a powered machine.

"September 4, 1908. Washington Bureau, New York Herald.

"Orville Wright in his aeroplane flew for one minute and eleven seconds, making three-fourths of a mile in distance at the Fort Myer parade grounds to-night. In landing, too steep an angle was made with the ground and a broken right hand skid resulted, doing, however, little damage.

"While the crowd, grown used to the delays, was audibly wondering whether there would be any flight or whether it was 'all a bluff,' without warning of any kind the machine shot down the rail into the air and away to the end of the field. As it left the rail, which slopes downward, it skimmed the tops of the low grasses, then rose slowly, dipping and bucking, jerking up and down, but always rising until, when it reached the tent, which it did in a few seconds, it was twenty-five feet in the air. A wide smooth turn to the left, the wings tilting in the air at a sharp angle, exactly as a bird's wings tilt when it is flying in a circle, and the aeroplane was off for the Arlington Ceme-

Twenty years ago the writer was reporter on the New York Herald, assigned to cover both story and pictures of the epoch-making aeronautical trials conducted by the Army, at Fort Myer, Va. The Signal Corps offered a bonus plus the cost for a successful heavier-than-air flying machine, which Orville Wright tried for in 1908 and won in 1909. From the reporter's old scrap books, and dust covered negatives these high lights of those events are here retold.

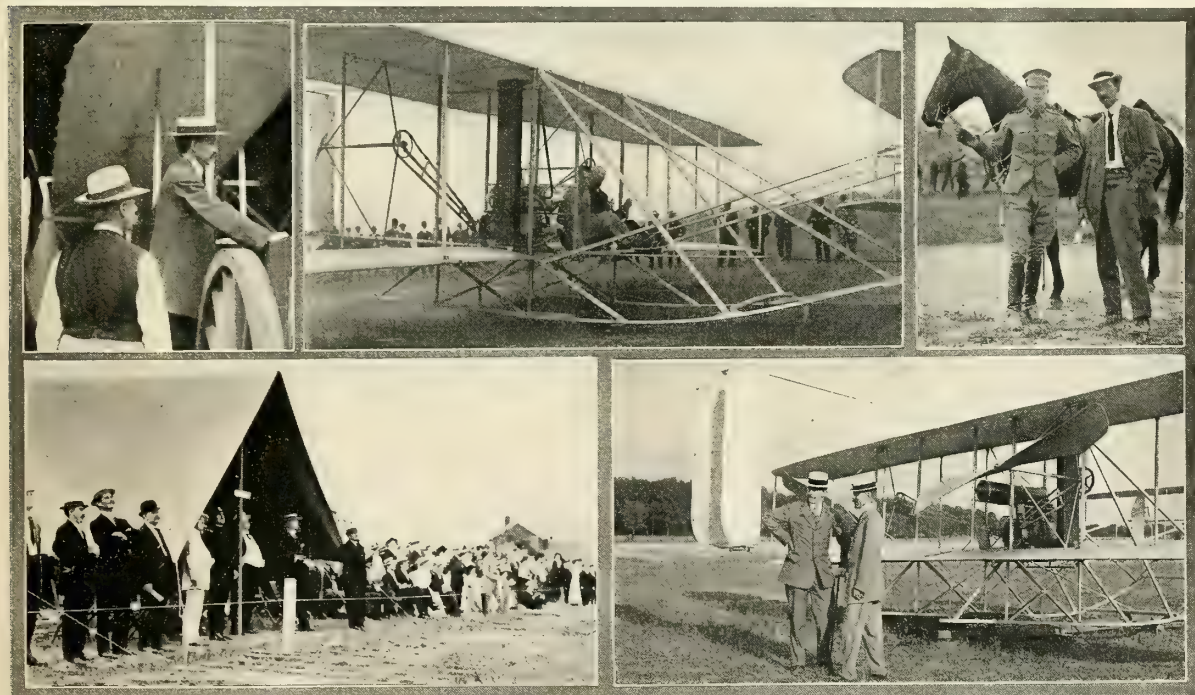
tery wall.

"Here another half turn was made to the cheers of the widely excited crowd, and the aeroplane swept up the parade ground. The bucking and jerking continued. The flight was neither smooth, birdlike, nor graceful, but it was flying,

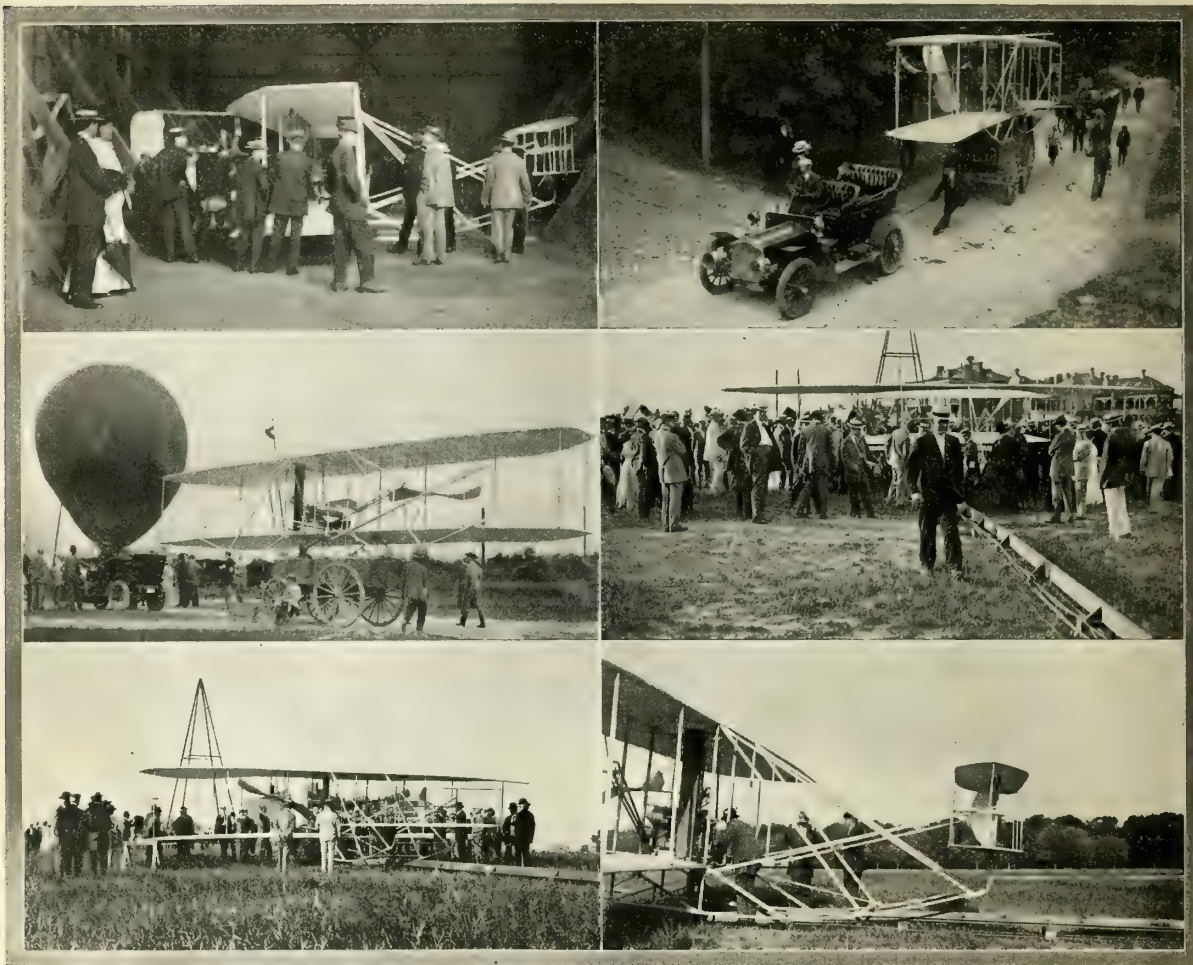
not floating. The observers who understood the significance of the sight were most enthusiastic. None who saw it can forget it, or the wonder of this mighty, heavy, clumsy looking mechanism, driven by a tiny motor and carrying a man, sustaining itself in the air by its own power and responding as does a boat or an automobile to the slight touches on one or another of the three levers."

A generation accustomed to cross-ocean, cross-polar and cross-continent flying cannot realize the excitement which resulted from the first public Wright flights. Few people believed that the awkward, home made, crude box kite like structure could fly. Balloons the public understood. Dirigibles were a marvel, but perfectly possible. But that a heavier-than-air machine could be practical, the man in the street simply didn't believe, and ten thousand of him went to Fort Myer and stood around to scoff when the reserved little man from Dayton first sat in the "aeroplane" as every one conscientiously pronounced it then, to give his first demonstration.

Before he made his first flight Orville Wright said: "The danger which we have to face now is in our own inexperience and the possibility that we may do something



SOME PROMINENT OBSERVERS OF ORVILLE WRIGHT'S FIRST PUBLIC FLIGHTS, FORT MYER, VA., 1908.
 (Top row) Orville Wright superintending loading of plane on wagon to go from balloon house to flying field (parade ground at Fort Myer); Lt. Thomas E. Selfridge and Orville Wright at start of flight on which Selfridge was killed; Lt. (now Brig. Gen.) Lahm and Glenn Curtiss; (bottom row) crowds at Fort Myer watching the flight—President Taft in tent; Ambassador von Bernstorff of Germany and Maj. (now Gen.) Squier, chief Signal Officer during the war.



PREPARATIONS FOR THE FIRST FLIGHT OF A "MILITARY AIRPLANE"

(Left to right—top) The plane being erected in a balloon house at Fort Myer. Being towed by automobile to the parade ground. (Center) The old and the new—balloon and airplane. Crowd surrounding the plane and the monorail on which the plane was launched. (Bottom) Plane on the wooden monarail, weight tower in background. Ready for launching.

wrong in making the flights. We have managed to learn our previous machines pretty well where the operator lay at full length in running the aeroplane, but this one is arranged differently. Here we sit up and the levers which control the planes and the tips are different, and we have to familiarize ourselves with these movements all over again. Where the movements should be instinctive we now have to think, and that is dangerous on account of the possibility of our not thinking fast enough."

Nevertheless he flew—and every daily paper in the country carried a front page story the next day.

The machine in which Orville Wright astonished the world, confounded the unbelievers, and turned a mob of skeptics into a bedlam shrieking, "I always knew he could do it," was a slight little affair, compared to some of to-day.

It had one four-cylinder motor weighing 170 pounds and developing twenty-five to thirty horsepower at 1400 r. p. m. It had no carburetor. The gasoline was pumped directly into the intake pipes, where the mixture was formed. The idea was to get a constant mixture and avoid carburetor troubles entirely. Wright cared nothing for control of the speed of the motor. He adjusted it to run at its best and left it alone. He said:

"The speed at which we fly is governed by the resistance the planes offer to the air. A carburetorless engine would not do on an automobile, because it would not per-

mit speed control, but on an aeroplane, where the minimum is about twenty-six miles an hour and the maximum forty miles, and where the different speeds can all be regulated with the planes, we have no need for a motor with varying speeds."

The frame was made of spruce and ash, webbed with unbleached muslin, about five hundred square feet to the lifting planes. The machine weighed eight hundred pounds without gasoline or oil, operator or passengers. In use there was two pounds of weight for every lifting square foot of plane.

This weird machine had no wheeled landing gear; it could not "taxi." It was catapulted into the air by means of a launching apparatus. This device consisted of a four-sided open work pyramid, thirty feet high, at the top of which was a pulley, through which ran a rope, which passed along and beneath the monorail track to a wheel pulley thirteen feet from the end. From this it was brought back to couple to the aeroplane. At the end of the rope, a ring was hooked on to a projecting tongue in the center of the flying machine.

Iron weights, 1200 pounds, were drawn to the top of the tower. With the propellers going and the operator in position, hand upon the levers, the machine was let go, the weights dropped to the ground, pulling the aeroplane rapidly forward along the rail. It attained a speed of

thirty miles an hour as it left the rail. When the plane reached the forward pulley wheel, the ring at the end of the rope slipped from the hook on the tongue, the tongue dropped to its normal place on the frame and the machine was free to take the air.

The machine came down in a series of swoops—the old clippings repeatedly speak of “coming down out of the air like a great bird coming down steps”—landing in a cloud of dust upon the skids, which speedily brought it to a standstill. As the maximum speed of the machine was less than forty miles an hour, this is not so strange.

The old photographs exhibit some structural details which to-day would cause the most foolhardy of circus stunt fliers to shake their heads. Indeed, the propinquity of revolving propeller blades to wire guys was proved murderous that same year. The Wright machine was a “pusher”; two propellers revolved at 500 r. p. m., in opposite directions, behind the wings. The propellers were chain driven; if ever a man trusted his life to a mechanism with many potentialities for dirty tricks, they did so who sat upon the tiny seats and stuck their feet out in front of them on the foot rest so designed that “in the event of a crash, the operator’s legs will not hit the ground.”

But everything held, for a while. The Wrights were most conscientious. They built the best they knew, and they built honestly. The faults were the result of inexperience.

And what was fatal also resulted from inexperience.

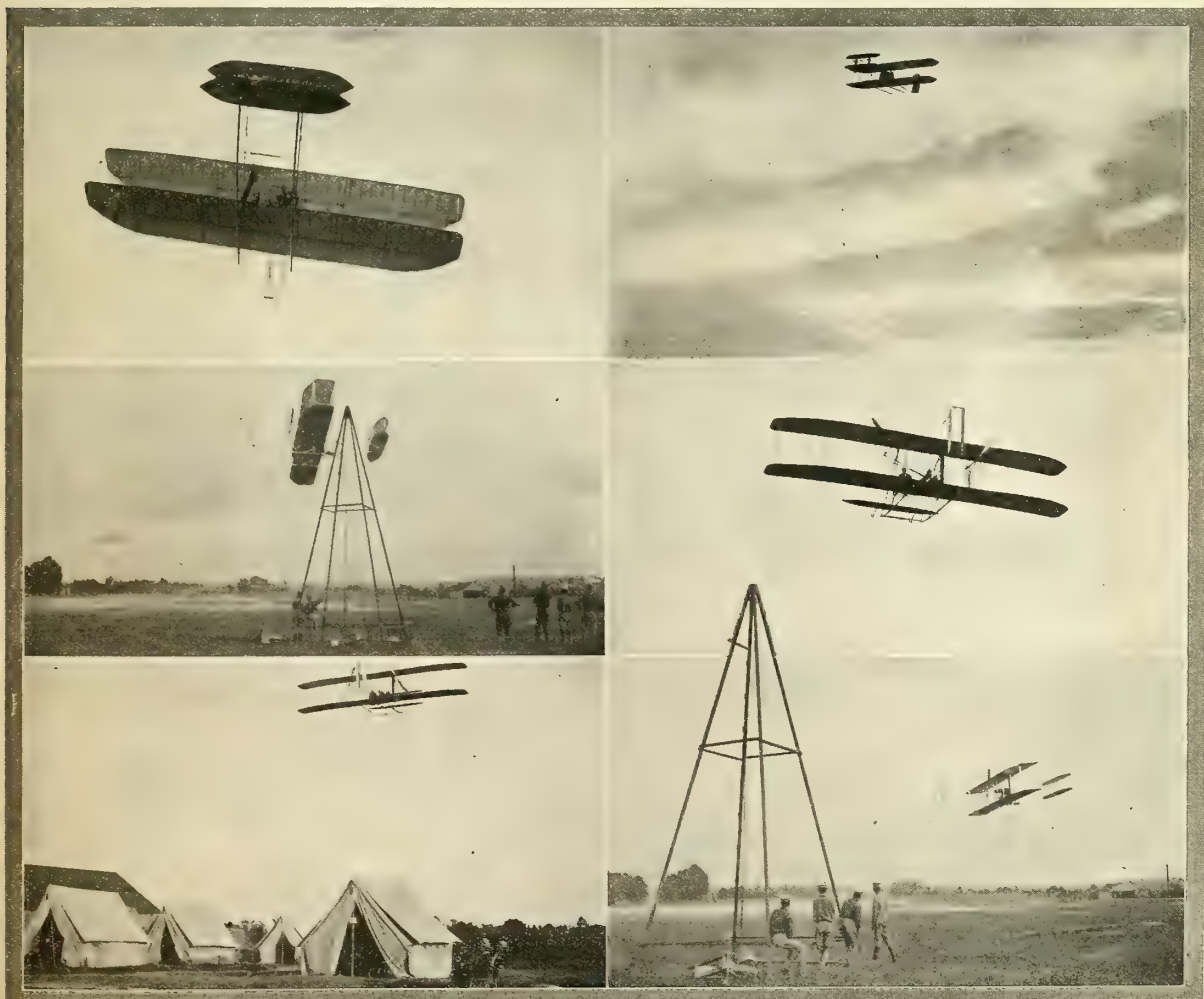
It was then considered proper to fly low. The greatest height noted in any of the Wright flights for the Signal Corps’ first heavier-than-air flying machine was 200 feet, and hundreds of photographs made by the *Herald* reporter show the average height of all flights to have been between twenty and fifty feet. Mr. Wright practiced what he preached. In an interview shortly before the crash which ended the flights in 1908 he said:

“What is the greatest use for the aeroplane? Speaking from a military standpoint, I should say scouting. There is little danger of an aeroplane being hit in the air if over a thousand feet high, and there is no limit to the heights one can soar. But it is a waste of time to climb up so high. Most of the flying of the future, in my opinion, will be done within a moderate distance from the ground.”

There is a limit to height even if some one is always breaking the ceiling record! No one now believes flying should be done within a “moderate distance” from the ground. We learned that lesson once and for all, when on September the 18th occurred the first of the long list of tragic deaths of those who were to give their lives that aviation might become safe for us all.

The reporter turns the yellowed pages to his story of that first accident:

“September 18, 1908, Washington Bureau, N. Y. Herald.



ORVILLE WRIGHT'S FLIGHT OVER FORT MYER. HE FLEW "LOW AND SLOW"

"Falling one hundred feet after overturning in midair, the Wright aeroplane was smashed to pieces on the Fort Myer parade ground, and Mr. Orville Wright and Lieutenant Thomas E. Selfridge, of the Signal Corps of the Army, a passenger on the aeroplane, were buried in the debris. Lieutenant Selfridge was fatally injured and died at ten minutes after eight o'clock. Mr. Wright was injured seriously, but will recover.

"The accident happened at nineteen minutes after five, after the men had been in the air for five minutes and had traveled the circuit of the parade ground three and one-half times. The immediate cause was the breaking of one blade of the left propeller."

And so on for five columns!

So died the man for whom the government's "Selfridge Field," at Mt. Clemens, Michigan, is named. A brave man and a fine one; a young officer of promise and greatly beloved by the newspaper men because he "didn't put on any side." Wright himself was very badly hurt—broken leg, broken ribs, cut, bruised and mystified. For no one knew what caused the accident. But investigation revealed it. A guy wire to the tail sagged—one of the propeller blades hit it, tore the wire loose, hit the loose wire, broke—and the machine turned around, "pancaked" as we would call it to-day, and crashed.

Wright was six weeks in the hospital. The *Herald* reporter (may one brag a bit, after twenty years?) managed to get the first interview with Wright, a clean scoop over every other paper, and then hid himself for a day lest common courtesy make it necessary for him to tell a fel-

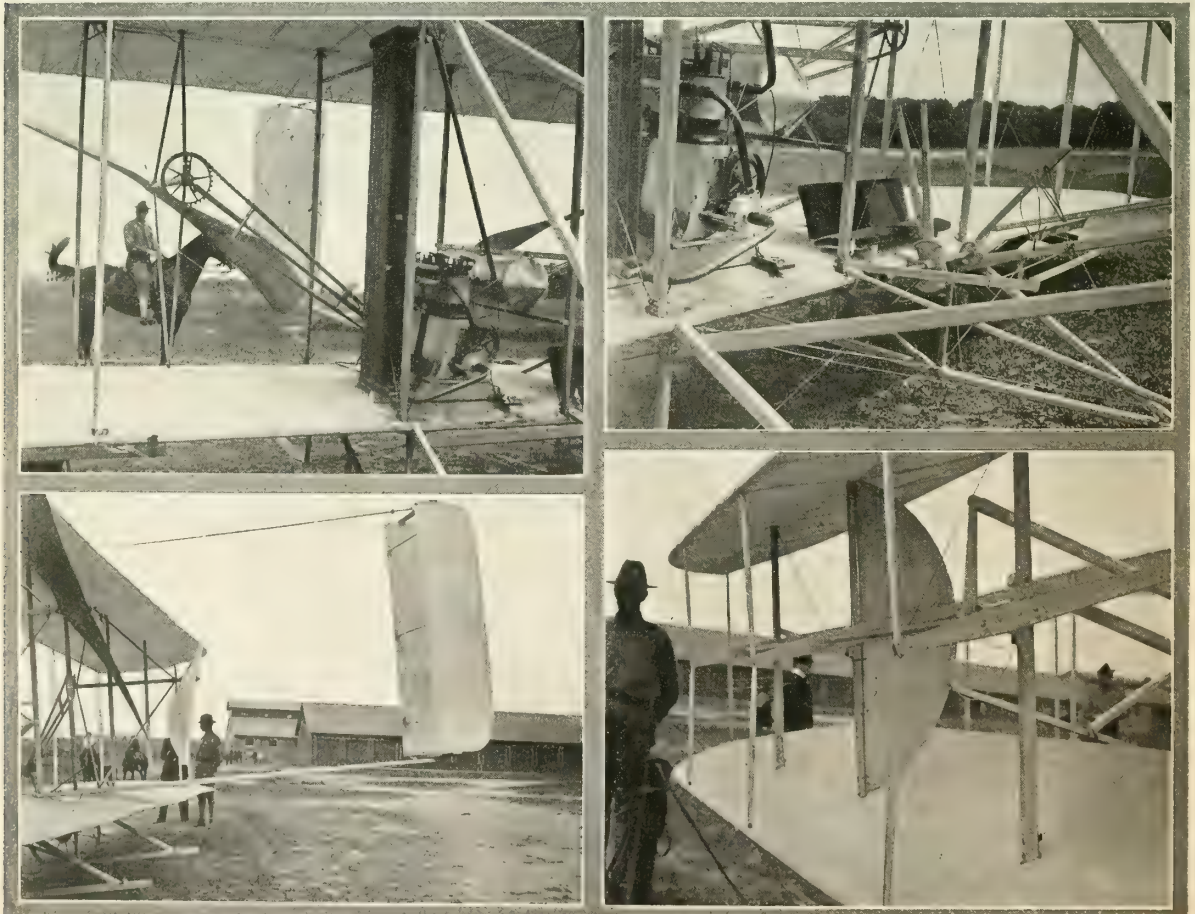
low scribe! Six weeks afterwards the reporter had the honor of carrying Wright in his arms from wheeled chair to ambulance, and from ambulance to train. He wonders whether Wright was more frightened in the crash or in that helpless journey in a young man's arms!

Well, Wright came back, his marvelous nerve not even touched. He grieved sorely over Selfridge, but Army contests wait not on deaths in the line of duty. The following year, with Wilbur Wright back from France, Orville again took up the tests.

The specifications of the War Department called for an aeroplane to carry two persons, weighing about 350 pounds, carrying sufficient fuel for a flight of 125 miles and at a speed of at least 40 miles an hour in still air. A bonus was provided for extra speed—if forty-one miles an hour, 110 per cent of the price; if forty-two miles, 120 per cent; forty-three miles, 130 per cent; forty-four miles, 140 per cent; if thirty-nine miles, 90 per cent; if thirty-eight miles, 80 per cent; if thirty-seven miles, 70 per cent; if thirty-six miles, 60 per cent; if less than thirty-six miles an hour, the aeroplane to be rejected.

On July 31, 1909, Orville Wright flew ten miles across country with Lieutenant (now Colonel) Foulois as passenger, first flight of its kind in history. The *Herald* reporter chased them in a motor car—and almost, not quite, kept up!

The speed made was forty-two miles an hour. The specifications were complied with. The tests were over. Uncle Sam had bought his first plane—pardon, aeroplane!



DETAILS OF CONSTRUCTION OF THE FIRST WRIGHT AIRPLANE DEMONSTRATED TO THE ARMY

AIR—HOT AND OTHERWISE

SOME time ago we announced that December 13th would mark the retirement of Major General Mason M. Patrick, Chief of the Army Air Corps. His assistant, Brigadier General James Fechet, steps into his official shoes.

We regret deeply the retirement of General Patrick from this important post, though we realize that he has wonderfully earned a period of ease, during which, of course, he will be on call if by any chance, unhappy as of war, or happy as of peaceful opportunity, his country shall need him.

Accepting his retirement as a necessary episode we even find our grief tempered by the fact that America has handy such a man as General Fechet has proved himself to be, during every moment of his eventful, splendid life in the service of his country.

We find it utterly impossible to feel any hint of fear as to the success of his administration.

The same hard labor which has earned the job for him, has trained him for the job. His advancement comes as the result of earnest effort for the country of his birth, and the best development of its military aviation, and not through political pull or favor. We could write a page or two upon this subject, but that, as Kipling says, would be another story. Besides, we shall be able to do better justice to it in a later issue.

THAT which most agitates our mind at present is the great query, how can the country best utilize, during the many years of vigor which we are sure remain to him after his retirement, the acquired knowledge and developed judgment which so notably characterize General Patrick, after he has said his farewells to the important post which he so notably has filled?

He is far too young in spirit, too vigorous of mind, to wholly cease his labors on behalf of the great cause he knows and loves so well. His knowledge, skill and foresight with regard to the development and interests of American aviation are too great to permit his countrymen to feel complacent at the thought of losing them. What can be done in such a situation? Anything?

Happily, yes. There is a place exactly fitted, as if made to order, in which the rare abilities of the retiring General may well be honored, and in which, at the same time, he may render further signal service to the nation.

In this place, if he will have the patriotism to accept it, and if those who have the privilege and the wisdom to invite him to it, General Patrick might do things even bigger than the big things he has done. It would keep him plentifully busy, but it would not overwork him. Filled by such a man it would become a position of vast import to the nation, whereas, now, it is one of no import whatsoever, a mere circle traced by nothing in a thin spot of empty space, a zero lying dead.

It is the place of the next President of the National Aeronautical Association.

FOR the past few years this organization has been the plaything of petty personal politics or pro-Navy propaganda, the abiding place of an embodied emptiness, wherein a trumpet, blown with ceaseless energy and terribly puffed cheeks, trembles in its pain, but still emits no useful sound.

A Ray of Hope

By

Frank A. Tichenor

Its original incorporators, as clearly indicated by that charter through which it sought the right to organize under the protective laws of the United States, intended that it should strive in every possible way to develop aviation in this

country. Its proud slogan (then) was: "Make America supreme in the air."

It has forgotten or neglected that original intention, and its slogan should be changed to: "Make the Navy politicians the arbiters of America's aeronautical destiny. Give them the jobs, give them the gilded lace, give them the privilege of being It."

For these things has it striven and still strives.

In its originally stated function it has failed completely. That has been melancholy. In its elderly (perhaps senile) aim it has made itself ridiculous. Should it perish from the surface of the earth (as it is now) it would mean as much to aeronautics as would be implied if Bud Fisher stopped drawing "Mutt and Jeff."

It has lacked everything required, including leadership, ideals and executive ability.

America needs a civilian aeronautical organization, able and anxious to cope with the problems of our national existence in their relationships to aerial navigation as they exist at present and as they may arise.

Soviet Russia has an organization of this sort, which serves it really well and has gathered to its rolls over two million members. The membership of the N. A. A., in this country, is less than 5,000. It ought to be at least a million.

And might be.

And WILL be.

The N. A. A. has had a yearly deficit and as a consequence anyone who would pay its debts could be its president.

WHEN General Patrick was made chief of the Air Corps he naturally took stock of that which had been dropped into his lap. He found a totally disorganized, discouraged, disgruntled group of groups, none with much enthusiasm, filled with petty hatreds, worried, inefficient. December 13th, when this same Air Corps is turned over to his successor, it is a patriotic, enthusiastic, completely organized machine, ready to serve against the nation's enemies, if any such arise. No better similar force exists in the thin air which is the envelope for this terrestrial sphere nor on its surface.

The new chief had to fight harder than the airmen of war times fought the Germans with various war secretaries and members of the changing General Staff in order to secure even the necessary equipment and the opportunity to train good men to use it. The poison gas of politics was dropped on him as if in bombs, it was squirted at him as if through those great nozzles that the Heinies used, it was floated toward him in great greenish yellow clouds of inimical interference every time he ventured upon Pennsylvania Avenue.

But he had patriotism, high purpose, unexcelled technical training, as much political strategy as it is well that any soldier should have, and supreme unselfish interest in the development of American aeronautics.

In the job, in consequence, he has gained the love and admiration of every

(Continued on page 758)

A VICTORIOUS YEAR OF AMERICAN AERONAUTICS—

1927

By

Adrian Van Muffling

THE twelvemonth that is now drawing to a close will go down in aeronautical history as the great year of American aviation.

Not only has this country led the world in the number and extent of spectacular long distance flights, but commercial aviation has finally emerged from the shell in which it has been incubating for all these long years, and having tested its wings, found them good. Moreover, to carry the simile a little further, it promptly began to eat the nourishment offered by confident and responsible capital and started to grow. American business finally became converted to the great possibilities which aviation opened to its expansion and progress.

It was due to the intrepid fliers who blazed the way and kept aviation on the front page for months at a stretch that a new national Air-Consciousness was born.

In previous issues AERO DIGEST has covered their exploits in detail. It has chronicled the stories of their flights and preparations thereto, and it has voiced the fliers emotions during their flights and the impressive receptions that were their lot after victory. As a fitting close to the year let us briefly recapitulate the history of the most notable aeronautical exploits of 1927.

NOTABLE AMERICAN FLIGHTS OF 1927

First came the Pan-American flight conducted by the Army Air Corps which began at San Antonio, Texas, on December 20, 1926 and ended at Washington on May 2nd of this year after having covered approximately 20,000 miles with stops in all Central and South American nations. This tour was a fitting successor to the Army 'Round the World flight of 1924 and its purpose was to promote amicable relations among all of the nations of the New World; also to demonstrate the feasibility of aerial communication among them—the only form of international transportation many of them can perhaps ever develop, due to geographical difficulties.

The amphibian planes that took part in the Pan-American trip and their personnel were as follows: *New York*, (flagship) with Major Herbert A. Dargue, flight commander in charge of the expedition, with Lieut. Ennis C. Whitehead as relief pilot; *San Antonio*, Capt. Arthur McDaniel and Lieut. Charles McK. Robinson; *San Francisco*, Capt. Ira C. Baker and Lieut. Muir S. Fairchild; *Detroit*, Capt. Clinton F. Woolsey with Lieut. John W. Benton; *St. Louis*, in charge of Lieuts. Bernard S. Thompson and Leonard D. Weddington. Of the five planes only three actually com-

pleted the trip, the *New York* having collided with the *Detroit* at Buenos Aires, which accident resulted in the death of the latter ship's valiant crew. Another plane was flown from Panama to join the others on their northward journey and to enable the commanding officer and his aide to complete the flight.

It was in April that the world at large first heard the name of Lindbergh, a name that a few months later was to echo in every corner of the globe. It was quietly announced that the young mail pilot intended to compete for the Orteig prize for a non-stop flight from New York to Paris.

The story of his preliminary flight from San Diego to New York in two hops and his subsequent exploit of flying across the Atlantic through almost every possible meteorological condition that could be encountered is too well known to be retold here. This man, who was so unassuming that he actually asked for letters of introduction to be presented in Paris, that he might be recognized, endeared himself to the public perhaps more by his avoidance of publicity, than by the flight itself. His feat did more to develop American air-consciousness than anything since the first flight made by man.

The Orteig prize having been won, Clarence Chamberlin had to seek new fields to conquer with his Bellanca plane, the *Columbia*. And so he decided to fly across the Atlantic and keep going as long as fuel capacity would carry him, the definite objective being Berlin. He encountered almost continuous fog straight on the road to Berlin on the evening of the second day and it was only for the accident of being a few miles out of the way that he missed his goal; for he landed in the dark near the little town of Kottbus, some 60 miles southeast of Berlin. The uninterrupted flight of 3,923 miles established a world's record.

The third ship that had been prepared for the New York-Paris prize flight was the *America*, a Fokker monoplane powered with three Wright Whirlwind motors, under the leadership of Commander Richard E. Byrd, with Lieut. George O. Noville, Bert Acosta and Bernt Balchen as assistants. They decided to fly to Paris with a view of making a study of meteorological conditions over the Atlantic. Although they did not succeed in reaching the French capital owing to fog, they did reach the French coast at Ver-sur-Mer and had considerable difficulty in extricating themselves from their machine after it plunged into the surf. The trip established a distance and duration record for three-motored ships and thus added another leaf to America's crown of glory.

NOTABLE DISTANCE FLIGHTS MADE BY AMERICANS DURING 1927

Flight	By	Starting Place	Date of Start	Finish Place	Date of Finish	Distance in Miles	Duration
Pan-American	U. S. Army	San Antonio, Tex.	Dec. 20, 1926	Washington, D. C. ...	May 2	20,000 (Apx.)	.....
New York-Paris	Lindbergh	Roosevelt Field, N. Y.	May 20, 1927	Paris	May 21	3,600	33 hrs., 29½ min.
New York-Germany	Chamberlin	Roosevelt Field, N. Y.	June 4	Eisleben (Germany) ..	June 5	3,923	42½ hrs.
Transpacific	U. S. Army	Oakland, Calif.	June 28	Honolulu	June 29	2,407	25 hrs., 50 min.
Transatlantic	Byrd	Roosevelt Field, N. Y.	June 29	Ver-sur-Mer (France) ..	June 30	3,477	42 hrs., 6 min.
Transpacific	Smith-Bronte	Oakland, Calif.	July 14	Molokai (Hawaii)	July 15	2,340	25 hrs., 36 min.
Transpacific	Goebel-Devis	Oakland, Calif.	Aug. 16	Honolulu	Aug. 17	2,407	26 hrs., 17 min., 33 sec.
(Dole Race)	Jensen-Schluter	Oakland, Calif.	Aug. 16	Honolulu	Aug. 17	2,407	28 hrs., 16 min.
New York-Tokio	Schlee-Brock	Harbor Grace, Newf.	Aug. 27	Tokio	Sept. 14	12,295	145½ hrs.
Transatlantic	Haldean-Elder	Roosevelt Field, N. Y.	Oct. 11	near Azores	Oct. 13	2,623	.....
U. S. Tour	Lindbergh	Roosevelt Field, N. Y.	July 20	New York	Oct. 23	22,350	.....

The year 1927 also saw the first successful non-stop flight over the Pacific Ocean from the mainland of the United States to Hawaii. This feat was accomplished by Lieuts. Lester J. Maitland and Albert F. Hegenberger of the Army Air Corps on June 28th.

The 2,407-mile flight established a record for distance flown entirely over water and was made in a few minutes less than 26 hours. It speaks highly for Lieut. Hegenberger's skill as a navigator that the Hawaiian archipelago was sighted a few miles from the point he had aimed for.

Sixteen days after the Army's successful trip to Hawaii two civilian fliers, Ernest L. Smith, pilot, and Emory B. Bronte as navigator succeeded in covering the same course. After having left Oakland Airport the fliers were once heard from about 150 miles off the coast and not again until they were 700 miles from their goal, when an S O S was received by various liners to the effect that they were running out of fuel. But it proved a mistake and they were able to continue their flight to land on the beach of Molokai Island.

The success and publicity attendant to all the above spectacular flights caused Mr. James D. Dole, a planter of Hawaii, to offer two prizes for a race from the United States to the islands. Of the eight planes which actually crossed the starting line only two arrived at the goal, four turned back for various reasons and two others, unfortunately, disappeared from human view forever. The successful contestants were Arthur Goebel and Lieut. W. C. Davis, U. S. N., in a Travel Air monoplane, and Martin Jensen with Paul Schluter in a Breese monoplane. Their time was twenty-six hours and seventeen minutes and twenty-eight hours and sixteen minutes respectively.

On August 27th, Edward F. Schlee, an American business man, and William Brock, a well-known pilot, started on the first lap of an intended 'round the world flight in fifteen days, the trip being undertaken as a demonstration of the possibilities of airplane transportation as a matter of commercial routine, rather than as a sporting proposition. Due to various delays which originated from government red tape in eastern countries and from adverse weather they fell behind their schedule and reached Tokio after 18 days, having covered 12,295 miles in 145½ flying hours.

Although this flight did not establish a world's record for either time or distance it may be regarded as one of the most remarkable exploits of the year. Schlee and Brock just flew along like two ordinary tourists with no prearranged servicing as is usual on trips of such length. To maintain an *average* daily mileage of 683 miles including delays is a feat of great fundamental importance to aviation.

Before they left Japan the two fliers were prevailed upon to abandon the remainder of the trip across the Pacific as being an attempt of too hazardous a nature.

Ruth Elder and her pilot, George Haldeman, in their

Stinson monoplane came near completing the fourth transatlantic flight from America to Europe. In some ways their undertaking was the most ambitious for the course they had mapped out included 3,600 miles over open water. Minor trouble with an oil pipe forced them down on October 13th about 350 miles northeast of the Azores, where an emergency landing was made alongside of a Dutch ship which took them aboard. The distance covered by them was 2,623 miles, the longest flown entirely over water.

The National Air Tour for the Edsel B. Ford Reliability trophy and \$20,000 in cash prize money started on June 27th from the Ford Airport and finished at the same place on July 12th, covering a trip of some 4,300 miles which included Boston, Baltimore, Kalamazoo, Columbus, Dallas and Omaha. Of the fourteen planes entered, thirteen completed the trip on which half a hundred people were carried. The 1927 tour was a great success and was notable in bringing home the growing casualness of flying, many people having been carried on short legs of the tour by invitation. It is this sort of thing that will make aviation popular among the people.

Scores of the 1927 National Air Tour: Stinson-Detroit monoplane, "Miss Wayco," Eddie Stinson, pilot, 9853.7; Hamilton Metalplane, Randolph G. Page, pilot, 7863.5; Mercury, Harvey C. Mummert, pilot, 7807; Ford Transport, Dean W. Buford, pilot, 7609; Waco-10, John P. Wood, pilot, 6857; Stinson-Detroit biplane, Leonard S. Flo, pilot, 6386; Waco-10, John Paul Riddle, pilot, 5785.5; Ryan, Frank M. Hawks, pilot, 5688; Waco-10, Charles W. Meyers, pilot, 6323; Buhl Airedan, Louis G. Meister, pilot, 5375; Pitcairn Mailwing, H. A. Elliott, 4666.3; Waco-10, E. W. Cleveland, pilot, 3725.

The National Air Derby and the Spokane Air Derby were held at Spokane, Wash., from September 19th to 24th with great success. It was the first time that an event of this magnitude proved to be a financial success, interest being keen enough to send the public in great quantities to the ticket booths. Twelve events were held in the National Air Races. The Derby consisted of a race from New York to Spokane, which was won by C. W. Holman in a Laird Commercial (Class A) and C. W. Meyers in a Waco-10 (Class B), and a race from San Francisco to Spokane, won by H. C. Lippiatt with a Travel Air (Class A) and C. L. Landdon in an International (Class B).

Another successful undertaking of great educational value was the trip made by Lindbergh after his return from abroad and sponsored by the Guggenheim Fund for the Promotion of Aeronautics. This flight, which covered 22,350 miles with 82 stops, only one delay due to weather conditions, and not a single forced landing, despite its being made with the original ship and motor that took him across the ocean, is in certain aspects of greater practical value than his more daring and
(Continued on page 762)

AMERICAN WORLD RECORDS FOR 1927

Record	Pilot	Aircraft	Altitude	Speed	Time	Distance	Date
Altitude (seap. with 500 kgs.)	Lt. G. R. Henderson, U. S. N.	Vought "Corsair"	22,178 ft.				Apr. 19
Speed (seap. with 500 kgs. 100 kms.)	Lt. S. W. Callaway, U. S. N.	Vought "Corsair"		147.26 m.p.h.			Apr. 25
Speed (seap. with 500 kgs. 500 kms.)	Lt. J. D. Barner, U. S. N.	Vought "Corsair"		136.02 m.p.h.			Apr. 30
Speed (seap. with 500 kgs. 1,000 kms.)	Lt. R. Irvine, U. S. N.	Vought "Corsair"		130.93 m.p.h.			May 21
Distance	C. D. Chamberlin	Bellanca				3923 miles	June 4, 5, 6
Altitude (seap.)	Lt. C. C. Champion	Wright "Apache"	37,995 ft.				July 4
Duration and Distance (seap. with 1,000 and 2,000 kgs.)	Lts. B. J. Connell and S. R. Pope	PN-10			11 h., 7 m., 18 sec.	947 miles	July 8
Altitude	Capt. H. C. Gray	Balloon (6-7-8 Cat.)	29,398 ft.			* 580 miles	March 9
Distance	S. A. V. Rasmussen	Balloon (3 Category)					July 4
						(Not officially homologated)	

CIVIL AERONAUTICS IN AMERICA

By
Clarence M. Young

*Director of Aeronautics
Department of Commerce*

TWENTY-FOUR years have passed since the epochal flights of Wilbur and Orville Wright, December 17, 1903. From the dreams of centuries these brothers fabricated the airplane of actuality. Then the world was startled by the fact that man had merely flown. To-day only a transoceanic flight rekindles the astonishment of two decades ago.

With the delivery of the Wright airplane to the United States War Department in 1808-1909, the first airplane to be owned by any Government, and the demonstration flights of the Wrights in France, Germany, Italy and England, there was awakened everywhere the idea of flight for civil purposes. Dr. Bell's Aerial Experiment Association and Curtiss in America; Vuia, Santos Dumont, Voisin, Farman, Bleriot, Pelterie and Ferber in France, Ellehammer in Denmark, Cody and Bellamy in England, Grade in Germany; and others had flown in their own machines and civil purchases had begun. Beginning in 1909 airplanes began to be built by experimenters throughout the country, mostly replicas of the successful planes of that day.

The airplane was such an outstanding novelty that obviously its exhibition in flight was its first application to civil use. From the fall of 1909 until 1914 scores of individuals and groups traveled throughout the country in exhibition and meets, some of the latter of which were of international character, and foreign contestants as well as Americans created new world records of various kinds. Several short-lived passenger-carrying routes were conducted over short distances and the airplanes had been demonstrated in forest fire detection, mail-carrying and in numerous other normal and emergency applications, but there was little of what properly might

be called "civil and commercial aviation" in the United States until after the World War.

The immediate possibilities of the airplane for military purposes were realized and, save in America, the military demand predominated. In the United States it was not until 1917 that military purchases exceeded civil production. In three postwar years the sale of surplus military craft to civilian purchasers still left the Army and Navy as the greatest consumers of new airplanes. From 1923 the civil consumption again exceeded that of the military. In 1926, 958 planes were marketed for commercial or private use as against 378 taken by Army, Navy, Post Office, Agriculture and exported.

The effect of the world conflict on the development of civil aviation in the United States was profound. Many new aircraft factories were built, hundreds of aeronautical engineers and designers were given an opportunity to demonstrate their skill, ten thousand pilots were taught to fly; nearly seventeen thousand planes were manufactured, scores of thousands of artisans became

skilled in aircraft production; all of which created a personnel and material out of which was to develop the post-war aviation which differs so widely from European commercial development. As everywhere else, until 1919, the entire effort in American industry was centered on winning the war and all commercial exploitation of airplanes was subordinated to military requirements.

But immediately after the war, some considerable percentage of those who had been engaged in the manufacture of aircraft or trained as pilots became interested in the civil possibilities of aircraft.

The "air service operator" sprang naturally out of the war experience. The young men who had learned to fly in the Army and Navy were too young to have



F. C. Hingsburg, Chief, Airways Division; Dr. Louis H. Bauer, Medical Director; Assistant Secretary of Commerce for Aeronautics, William P. MacCracken, Jr.; Dr. J. H. Dellinger, Chief, Radio Section, Bureau of Standards; Ernest L. Jones, Chief, Information Division; who with the Director of Aeronautics, Clarence M. Young, (above) comprise the heads of the Aeronautics Branch, Department of Commerce.

had much business experience and when the armistice sent them back to civil life certain of them found themselves with one great desire—to continue in the alluring field of flight. As the government had thousands of surplus planes and engines to be disposed of, these war pilots created a legitimate market and they soon developed into a nation-wide group of air propagandists largely responsible for such air-mindedness of the American people as exists to-day.

They soon learned that the desire to fly was so general that they could earn more money by flying from place to place and carrying passengers for a moderate charge than could be made in other pursuits in civil life. The requirements for this work were merely a used war airplane and a few supplies for repairs. Any farmer's field could be used for a landing field.

This war surplus of planes and engines enabled many hundreds of civilian and ex-service pilots to finally establish themselves permanently in more or less profitable

enterprises in as many towns of the country, carrying passengers on short rides, giving instruction in flying, doing aerial photography, making cross-country flights in response to emergency or other calls and generally developing commercial air service.

By the end of 1926 the war surplus of aircraft had become about exhausted and there had been marketed a number of low-priced airplanes of entirely new construction utilizing still war surplus engines of low power.

To-day America is doing a prodigious amount of civil flying. It may generally be divided into three classes: *Air transport*—scheduled operations over regular routes (mail, express, and passenger); *commercial air service*—such as "taxi" service, crop dusting and spraying, photography, over-city rides, tours, and so on; and *private flying*—including pleasure aviation and the travel of business men using airplanes in their daily affairs.

AIR TRANSPORT

To the surplus of aircraft at the conclusion of the war,



Department of Commerce Inspectors: Left to right, top row—Philip R. Love, Edison E. Mouton, Durston G. Richardson, William N. Breingan, Daniel Scarritt, Parker D. Cramer. Second row—James L. Kinney, Frank H. Jerdone, James M. Johnson, Wayne S. Green, Henry A. Frese, Ewing W. Day, Jr. Third row—Ernest A. Cutrell, W. R. Jones, Gilbert G. Budwig, Walter A. Brooke, Ralph G. Lockwood, Leo G. Wilson. Bottom row—Richard H. Lees, Jr., Winthrop O. Sargent, Walter F. Parkin, Carl B. Eielson, Sanford L. Willits, Robert H. Gast.

and the experience in the carrying of messages, mail, and personnel by air during the war, may probably be ascribed the inauguration in Europe in 1919 of an airway system which has now been extended to cover Central Europe and reaches into Africa, Asia, and the far corners of the world.

A great passenger and express business has been developed in addition to air mail. The routes are supported in the main by subsidies, direct or indirect, amounting to a great sum annually. Many of these routes serve colonial possessions without regard to purely civil or commercial reasons.

Development of Airways in America

As in Europe, prior to the World War, no mail, passenger, or express air routes were continuously operating in the United States save for some seasonal short lines operated spasmodically and for occasional brief demonstrations in cooperation with the Post Office Department at air meets and exhibitions.

For a brief period in 1918 an experimental air-mail route was operated by the Post Office Department between New York and Washington, D. C.

In 1919 the Post Office Department initiated the transcontinental air mail route between New York, Chicago, and San Francisco. The operation of planes between Cleveland and Chicago was begun on May 15. On July 1 the operations were extended from Cleveland to New York.

Beginning May 15, 1920, the line was extended west from Chicago to Omaha, and on September 8, 1920, flying began between Omaha and San Francisco, completing combination daylight airplane and night train service across the continent. The mail was flown out of New York and put on a train in the evening at Chicago, taken off the train the following morning and flown the remainder of the route.

A route from St. Louis to Minneapolis-St. Paul was operated by the Post Office Department between December 1, 1920, and June 30, 1921.

First Contract Routes

On October 15, 1920, foreign-mail contract routes were inaugurated between Seattle and Victoria in the northwest and between Key West and Habana in the southeast. The Seattle-Victoria route still continues operation. The Florida route was discontinued March 31, 1923, to be resumed in 1927.

Another foreign contract air-mail route began operation April 9, 1923, between New Orleans and Pilottown. The Seattle and New Orleans routes carry 2-cent mail to and from steamers and save many days.

A contract route was also operated between Fairbanks and McGrath, Alaska, from February 1 to June 30, 1924.

First Night Service

On July 1, 1924, night flying began between Chicago and Cheyenne, this portion of the transcontinental route having been lighted by the Post Office Department. Subsequently lights were added between Chicago and New York to the east, and between Cheyenne and Salt Lake City to the west.

To-day's Air Routes

As a result of the air mail act of February 2, 1925, with amendments, there has rapidly developed a great contract air-mail system, the nucleus of the now growing air-transportation net.

On January 1, 1926, the Post Office Department had the transcontinental mail route in operation both ways between San Francisco and New York, with an additional night service both ways between Chicago and New York; and the two foreign contract routes out of Seattle and New Orleans.

At various dates, beginning February 15, 1926, nine other contract routes were put into operation, and on June 30, 1926, the airway system consisted of 12 routes.

During the second half of the calendar year 1926 other routes were added and the Post Office Department advertised the transcontinental and New York-Chicago overnight routes for private operation. The contract for the section from Chicago to San Francisco (daily) was let to the Boeing Air Transport and for the section between Chicago and New York to the National Air Transport (daily and nightly). The Boeing company began operation July 1, 1927, and the National Air Transport began September 1, 1927.

There were 55 station stops on the routes in operation on June 30, 1926. Over \$5,000,000 was invested in the contract airway system by the air-mail contractors in the calendar year 1926, and this sum was rapidly increased as new routes and new vehicles were added.

By the end of the calendar year 1926, 18 routes had been operated for mail or passengers, or both, and freight.

Save for that portion of the Government's route between Salt Lake City and New York, lighted by the Post Office Department, all civic airway flying before July 1, 1926, was done without lighting facilities. The economical use of the airplane demands flying by night as well as by day and in all vicissitudes of weather and season, and it is the purpose of the Department of Commerce, under the air commerce act of 1926, to furnish to air traffic those aids which will result in the greatest degree of flight efficiency. Lighting of the airways was undertaken immediately upon the organization of the aeronautics branch in the fall of 1926, and before the end of the calendar year 1926 some lights were already placed in operation. On June 30, 1927, there were 4,121 miles of lighted airways, including the 2,041 miles on the transcontinental airways which had been lighted by the Post Office Department.

On July 1, 1927, there were 15 mail lines in operation and 9 more advertised for bids. In addition there were 3 nonmail routes. The 24 mail routes will serve 65,677,209 people in the various trading areas along these airways, with 75 station stops.

COMMERCIAL AIR SERVICE

By far the greatest volume of flying in America has been done by fixed-base and itinerant air-service operators—individuals, firms, and corporations engaged in taxi service, crop dusting, journalism, and news photography, sight-seeing, commercial photography and mapping, touring, flying instruction and other miscellaneous pursuits—utilizing light commercial planes of both new and war-surplus materials.

This class of operators has no parallel in any other country. The itinerant pilots have become fixed-base operators and this phase of commercial flying has settled down into solid business.

To the Post Office Department and air-service operators belongs the credit for keeping flight before the public during the whole postwar period. Their pilots flew nearly 19,000,000 miles in 1926, according to the department's estimates.

PRIVATE FLYING

Unexpected purchasers at this comparatively early stage of general flight are the corporations and individual business men who have bought the most modern airplanes for business travel. Corporations, particularly, have put into service the largest cabin planes with triple engines.

There remains the sport and pleasure use of aircraft—private flying. This is developing very rapidly, and thousands of private owners will soon fly for pleasure in

up-to-date, modern, inherently stable aircraft at a reasonable cost. Comparatively low-priced airplanes of new design and construction are now available and are quickly replacing the many war-surplus types that have been serving until the present time. Manufacturing and the development of additional aircraft will continue on an ever-increasing scale, and it is difficult even to venture a guess as to the limitations on this class of flying.

AIRPORTS AND LANDING FIELDS

The inauguration of contract mail and other routes forced the establishment of new airports or the improvement of existing airdromes at every station stop along airways by the municipalities—either directly by the city or in its behalf by civic organizations, or by private enterprise.

Everywhere civic interest has been stirred by the progress of air transport, and cities all over the country, both on and off the airways, are working with the airport idea toward varying degrees of airport excellence. These airport facilities may be rated under the act. The value of the land and improvements varies greatly, running as high as \$1,000,000 or more at the larger ports.

At the close of the fiscal year 1927 there were recorded 864 municipal, commercial, or private airports, intermediate fields maintained by the Department of Commerce and unimproved but permanent landing fields, a great many of which were reconstructed or proposed for development in accordance with the standards suggested by the department.

In addition, airports of one grade or another were under discussion in 144 cities, with the number growing. It is

estimated that about 1,000 airports will be in operation at the end of the fiscal year 1928. Of these a large portion will be municipal.

AIR MARKING OF CITIES

Thousands of cities are being air marked. During the year one oil company painted city names on most of its 4,200 stations in 10 states, and four other concerns are similarly marking towns in other states.

As the year closed the support of the governors of all states was enlisted in urging civic associations to push the program of marking. Every such organization has been furnished with uniform specifications as to size and colors.

EQUIPMENT-DESIGN PROGRESS

The passenger-service airplane of to-day is so far advanced that it is difficult to realize that scheduled air transport service as we now know it is less than two years old.

We are still prone to think of the passenger airplane as the two-seated, open-cockpit affair of war and postwar days.

Heretofore the designer has been almost entirely engrossed with wing and power loading curves and resistance—flight efficiency along the particular line demanded.

Now, however, attention is being given to comfort and equipment. To-day one steps into a cabin-type aircraft, takes a comfortable upholstered seat with ample leg room, and departs himself in the same manner as in a closed automobile of the most modern construction.

The closed airplane has developed far more rapidly than the closed automobile. The leather coat, the helmet, and the various paraphernalia of the air traveler of yesterday



Stinson



Laird



Fairchild



Mahoney



Travel Air



Buhl

Some of the airplanes used for transportation by officials of the United States Department of Commerce

have disappeared. Even the pilot of the modern passenger plane is inclosed in a comfortable, heated cabin with sliding or hinged glass windows, which may be opened for ventilation or for better visibility. The question of comfort is being given ever more serious consideration.

Into the plane itself has been built the inherent stability promised for a quarter century. Yet sacrifice has not been made of maneuverability and controllability.

One of the most striking features of late development has been the general application of brakes to airplane wheels, by which the landing roll is greatly reduced. Brakes on either wheel are independent in action so that they can be used for maneuvering on the ground.

Oleo pneumatic and oleo spring gears are being widely adopted for shock-absorption purposes on the landing gear and have proved very successful in improving landing characteristics.

In the design of the fuselage, wood and wire construction have been almost entirely superseded by welded steel tubing or other metal construction. Wings continue to be largely built of wood spars and ribs with fabric covering. Several manufacturers have, however, given attention to the construction of all-metal planes of duraluminum with a very thin sheet of the same material replacing the fabric, and more than one such design is in commercial use.

In general airplane design there is a tendency to revert to the monoplane which was used so extensively in early days of aviation. The visibility for both pilot and passengers is greatly improved over that of the multiplane type, and for the present demands upon commercial planes, monoplane construction presents no unusual problems for the manufacturer.

The weight of the power plant per horsepower has been materially reduced, and one of the newest engines has reduced the frontal area some 30 per cent. Improved propellers at the same engine speed in the identical airplane give greater efficiency. The air-cooled engine is being extensively used for commercial purposes because of its light weight, simplicity of installation, and reliability.

In the installation of the engine considerable attention is being given to exhaust manifolds which both reduce the noise of the engine and carry the exhaust gases clear of the passenger compartment.

Air-pressure systems for the gasoline supply have been almost entirely replaced by gear-driven pumps and gravity, and one of the greatest hazards—that of fire—has thus been practically eliminated.

The cargo space of two or three years ago was 50 to 60 cubic feet for approximately 1,000 pounds of useful load with 400 horsepower. Now, we find many planes of 200 horsepower with a similar load capacity and double the cargo space, and at the same or better speed. The cause is found in the greater efficiency in design and construction of both aircraft and engines.

With the same assurance offered by train, air service now furnishes a 10-hour schedule between New York and Chicago; 30 hours to the Golden Gate; and overnight to Florida. This illustrates the speed of air transportation, undoubtedly the greatest advantage this vehicle offers.

The cost of air-transport operation is yet a problem, but it is being rapidly overcome as the volume of business increases. Many of the commercial companies now, while being obliged to maintain a complete overhead, are operating at only a fraction of cargo capacity. This situation will adjust itself and the costs will be more efficiently distributed. The differential in speed, however, between air travel and other methods of transportation is important and

must be taken into account when determining comparative costs. The cost of air transport to the traveler is surprisingly low when the time element is considered.

WEATHER AND FLIGHT

Though the airplane in emergency is often the sole means of communication, yet its operations in scheduled daily service are affected to some extent by weather, practically the only hindrance to perfect performance.

Of the 5,272 trips scheduled on civil airways during the first half of the 1927, 623 of the 685 trips which were defaulted were chargeable to bad weather.

The difficulty of night flying is being rapidly overcome by lighting and other aids to navigation.

Of all weather conditions described as bad, fog presents the greatest hazard. Research and experimental work is being conducted at the Bureau of Standards to overcome this, however, by the development of suitable navigation instruments. An unofficial committee organized by the Guggenheim Fund for the Promotion of Aeronautics, which includes representatives of various Government bureaus, is likewise endeavoring to further research in the elimination of fog as a prohibitive of flight.

AIR ACCIDENTS

Under the air commerce act accidents are required to be investigated and reported, and the department is now performing this function.

Casualties in scheduled airway flying are comparatively rare.

In 1926 the Government-operated transcontinental suffered one pilot fatality. One occurred during the first half of the calendar year 1927. Weather conditions were responsible for one of these accidents. The exact cause of the other is unknown.

On the contract routes there were three pilot fatalities and one passenger fatality in 1926. Three accidents were ascribed to weather. One was of undetermined cause. During the first half of the calendar year 1927 there were two pilot and one passenger fatalities, in two accidents, both chargeable to weather.

Pilot examinations, plane inspections, and the lighting, weather service, and other aids to airway flying, now installed or in the department's program, should practically eliminate accidents in scheduled flying.

In air service operations and miscellaneous flying it is expected that casualties will be more frequent; but here, also, the enforcement of precautionary measures and the utilization of the Government's facilities will decrease the casualty rate.

During the last half of the fiscal year 1927, 15 pilots and 28 passengers were killed in 25 airplane accidents in this country. These accidents occurred in course of "taxi" service and pleasure rides, test flights, and instruction. Thirteen of the accidents were ascribed to error in pilotage, 3 to power-plant failure, 2 to weather, and 7 to structural failure. Practically all these accidents occurred with unlicensed pilots and in unlicensed planes.

AIRCRAFT PRODUCTION AND TRADE

The aircraft industry is in the position of being far behind on orders. It is reasonably expected that the production of airplanes during the calendar year 1927 will at least double that of 1926. Even this may be too moderate an estimate.

In a special count made by the Bureau of the Census in cooperation with the aeronautics branch of the department, the 1926 output of the manufacturing industry was 1,186 planes valued at \$8,871,027 as against 789 in 1925 with a valuation of \$6,673,659.

The military services, the Department of Agriculture, and the Post Office Department took 328 of the 1926 planes, and 50 were exported, leaving 808 as the minimum civil consumption. In addition, air-service operators produced approximately 150 planes.

The total value of work done in 1926 by establishments engaged primarily in the manufacture of airplanes was \$24,161,752, including the value of airplane engines, amounting to \$4,080,571, made by establishments engaged primarily in the manufacture of such engines. The total value of products reported for 1926 by establishments in the aircraft industry proper is \$20,081,181, as compared with \$12,524,719 for 1925, an increase of 60.3 per cent.

It might be said that the present civil demand represents but the initial production of a new industry. Civil aeronautics has, in the main, been operating on war surplus. The demand for modern planes, the diminution of war supply, the development of better engines, and the application of Federal inspection, combined with the widespread acceptance of the airplane in business promise an increase of which any estimate must be but a guess.

Exports

During the calendar year 1926 the total value of United States exports of aircraft, aeronautical engines, and parts for planes increased satisfactorily over those of 1925. Specifically, they increased \$243,551 over the 1925 total of \$783,659, showing a valuation of over \$1,000,000. This is very encouraging in view of the number of sales made in Latin America by European companies during the past year, American manufacturers finding their prices very difficult to meet due to European currency depreciation.

The record of the first half of 1927 forecasts another increase for the full year.

The greater part of the increase in exports was registered in aircraft engines, the number of units showing an increase from 73, valued at \$170,793, in 1925 to 297, with a valuation of \$573,732, in 1926. However, the average engine unit value decreased 14.5 per cent during the same period indicating that a much greater percentage of salvage types were exported in the latter year.

The number of planes exported decreased from 80 to 50 units during the same period. Here again the unit value decreased somewhat, as the 1925 exports of planes were valued at \$511,282, while the value of exported

planes fell to \$303,149 in 1926. Airplane parts showed an increase of nearly 50 per cent, from a valuation of \$101,584 in 1925 to \$150,329 in 1926.

The United Kingdom was our leading market for aircraft products in 1926, taking \$281,050 of the total. Soviet Russia was second, our export to that country totaling \$270,739; Peru was third, with \$120,231; Mexico fourth, with \$85,459; and Canada fifth, with \$47,276.

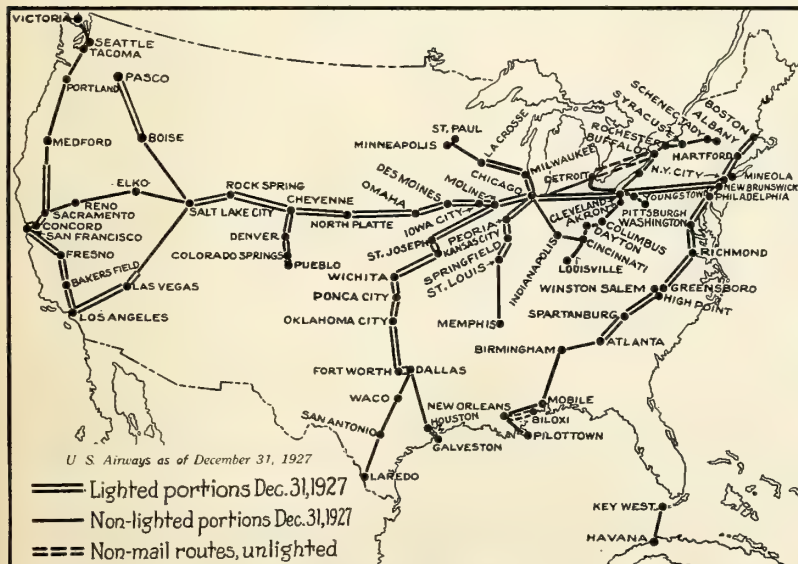
For the first half of 1927 exports of airplanes decreased from 26 units for the same period in 1926 to 19 but the unit value increased from \$4,729 to \$16,400, indicating purchases of modern, new planes. Latin America was our leading market with a total of \$239,919.

Engine exports in 1927 show a decline both in number and value, when contrasted with the same period of 1926. However, the situation is not discouraging, as with a few exceptions exports of aircraft engines consisted of new engines of relatively high unit value. The wide distribution of these exports would indicate also that the majority were experimental orders. The low unit value of \$1,795 in 1927 is accounted for by the fact that 53 engines, with an average unit value of \$456, were exported to Canada. Of the remainder, 13 engines had an average valuation of \$7,572 each.

The export value of aircraft parts during the first six months of 1927 was almost 100 per cent higher than during the same period of 1926. One-third of the total during the present calendar year has gone to Canada. Furthermore, the exports of parts to Canada during the first six months of the year far exceeded the total exports of aircraft, engines, and parts to that country during the entire calendar year 1926. Soviet Russia in Europe and the United Kingdom also loomed up relatively large as export markets for aircraft parts during the present year, as did Chile in the Western Hemisphere.

AIM OF THE AERONAUTICS BRANCH

It is the aim of the Department of Commerce to assist in bringing about a combination of four elements which are considered essential to the success of civil aeronautics in this country: (1) airworthy aircraft, adequately equipped and efficiently maintained, and (2) flown by competent pilots over (3) suitably equipped airways (4) in conformity with standard air-traffic rules. When this has been accomplished the public will take air transport for granted, as it does the railroad, the steamship, and the automobile.



Map showing the lighted and unlighted portions of the United States airways at the present time. On June 30, 1927 there were 4121 miles of lighted airways, the facilities totaling 124 intermediate fields with beacon and boundary lights, 719 airway beacons and 17 radio stations. By June 30, 1928, there will be 3,398 additional miles equipped with lights, and 6,257 more miles are projected for the year 1929.

TABLE A.—Air transport routes in the United States July 1, 1924, to June 30, 1927

[Route miles in operation June 30, 1927, 8,396]

Route	Mileage	Service commenced	Present schedule	Operator	Service
San Francisco-New York ^{1,2}	2,612	July 1, 1924 ³	Daily	U. S. Post Office Department	Mail.
Seattle-Victoria	77	Oct. 15, 1920	12 round trips a month, average.	Northwest Air Service ⁴	Mail and passenger.
Pilotown-New Orleans	75	Apr. 9, 1923	27 round trips a month, average.	New Orleans Air Line ⁵	Mail.
San Diego-Los Angeles ⁶	112	Mar. 1, 1925	Daily	Ryan Air Lines ⁷	Passenger.
Chicago-New York, overnight ⁸	718	July 1, 1925	Daily	U. S. Post Office Department	Mail.
Key Largo-Key West ⁹	100	Jan. 1, 1926	6 days a week ¹⁰	Fairchild Aviation Corporation	Mail and express.
Detroit-Cleveland	155	Feb. 15, 1926	do	Ford Motor Co. ¹¹	Do.
Detroit-Chicago	252	do	do	do	Do.
Miami-Atlanta ¹²	740	Apr. 1, 1926	6 days a week ¹³	Florida Airways ¹⁴	Mail, express, and passenger.
Salt Lake City-Pasco	535	Apr. 6, 1926	do	Robertson Aircraft Corporation ¹⁵	Mail.
Los Angeles-Salt Lake City ¹⁶	633	Apr. 17, 1926	Daily	Western Air Express ¹⁷	Mail, express, and passenger.
Dallas-Chicago ¹⁸	995	May 12, 1926	do	National Air Transport ¹⁹	Mail.
Pueblo-Cheyenne	200	May 31, 1926	do	Colorado Airways ²⁰	Mail and passenger.
Chicago-Minneapolis-St. Paul	399	June 7, 1926	5 days a week	Northwest Airways ²¹	Mail.
New York-Boston ²²	219	July 1, 1926	6 days a week ²³	Colonial Air Transport ²⁴	Mail, express, and passenger.
Washington-Philadelphia-Norfolk ²⁵	234	July 6, 1926	Twice daily	Philadelphia Rapid Transit ²⁶	Do.
Detroit-Grand Rapids	140	Aug. 2, 1926	6 days a week	Stout Air Services ²⁷	Express and passenger.
Los Angeles-Seattle	1,152	Sept. 15, 1926	do	Pacific Air Transport ²⁸	Mail, express, and passenger.
Detroit-Buffalo	218	Mar. 28, 1927	do	Ford Motor Co.	Express.
Pittsburgh-Cleveland	121	Apr. 21, 1927	Daily	Clifford Ball ²⁹	Mail.
Louisville-Cleveland	345	May 18, 1927	6 days a week	Embry Riddle Co.	Express and passenger.

¹ On July 1, 1927, the San Francisco-Chicago portion of the Government operated transcontinental route is to be taken over by the Boeing Air Transport, and on Sept. 1, 1927 the remaining section, Chicago-New York day and night service, will be taken over by the National Air Transport.

² Beginning Sept. 1, 1927, this route will carry express under contract with the American Railway Express Co.

³ On May 15, 1926, combination rail and airplane transcontinental service began. Through transcontinental air service began July 1, 1924.

⁴ Air-mail contractor. ⁵ Discontinued, 1926. ⁶ Not included in total mileage. ⁷ Discontinued Apr. 12, 1926. ⁸ Except holidays.

⁹ Began Apr. 1, 1926, between Jacksonville and Miami, and Sept. 15, 1926, between Atlanta and Jacksonville; discontinued Dec. 31, 1926.

¹⁰ Except holidays and days following.

¹¹ Operated during the Sesqui-centennial Exposition only; discontinued Nov. 30, 1926.

Air transport routes in the United States, June 30, 1927 to November 1, 1927

Route	Mileage	Service commenced	Latest schedule	Present operator	Present service
Chicago-New York	712	July 1, 1919	Daily and nightly	National Air Transport	Mail, passengers, express
San Francisco-Chicago	1919	Sept. 8, 1920	Daily	Boeing Air Transport	Mail, passengers, express
Pueblo-Cheyenne	200	May 31, 1926	Twice daily exc. Sunday	Stout Air Services	Passengers
Detroit-Cleveland	155	Sept. 1, 1927	Daily	Pan American Airways	Mail, passengers
Key West-Havana	104	Oct. 28, 1927	Daily		

Routes contracted, advertised or proposed [Route miles now scheduled to be in operation soon, 12,149]

Route	Mileage	Service	Operator	Service
Cleveland-Buffalo-Albany	446	Mail	Colonial Western Airways	Mail
Atlanta-New York	763	Mail	Pitcairn Aviation	Mail
Laredo-Dallas	385	Mail	Seth W. Barwise	Mail
New Orleans-Atlanta	287	Mail	St. Tammany Gulf Coast Airways	Mail
Louisville-Cleveland	483	Mail	Continental Air Lines	Mail
Minneapolis-Chicago	345	Mail	Mail bids opened, not let.	Mail
Atlanta-Jacksonville-Miami	287	Mail	Mail route advertised	Mail
Salt Lake City-Great Falls, Mont.	622	Mail	Mail route advertised	Mail
New Orleans-Biloxi	489	Mail	St. Tammany Gulf Coast	Passenger
	75	Passenger		

Schedule of Contract Air Mail routes in operation in the United States, November 1, 1927

C. A. M. 1—Boston, Mass., Hartford, Conn.; New York, N. Y. (192 miles each way), connection at New York, N. Y., in each direction

NORTHBOUND (Daily ex. Sundays and National Holidays)	SOUTHBOUND (Daily ex. Sundays and National Holidays)
LEAVE New York, N. Y. (Penn. Sta.) 3:00 a.m.	ARRIVE Boston, Mass. 6:15 p.m.
(Hudley Field) New Brunswick, N. J. 5:00 a.m.	Hartford, Conn. 7:35 p.m. (Hudley Field) New Brunswick, N. J. 9:15 p.m.
Hartford, Conn. 6:15 a.m.	Boston, Mass. 11:30 p.m. (Gen'l Post Office)

C. A. M. 2—Chicago, Ill., Peoria, Ill., Springfield, Ill.; St. Louis, Mo. (278 miles each way), connection made from New York, N. Y., via C. A. M. 17 (Overnight) Route.

SOUTHBOUND (Daily ex. Sundays, Mondays and National Holidays)	NORTHBOUND (Daily ex. Saturdays, Sundays and National Holidays)
LEAVE Chicago, Ill. 5:50 a.m.	ARRIVE Peoria, Ill. 8:15 a.m.
Peoria, Ill. 7:25 a.m.	Springfield, Ill. 9:15 a.m.
Springfield, Ill. 8:15 a.m.	St. Louis, Mo. 10:10 a.m.

C. A. M. 3—Chicago, Meane, Ill.; St. Joseph, Kansas City, Mo.; Wichita, Kans.; Ponca City, Oklahoma City, Okla.; Port Worth, Dallas, Texas (597 miles each way), connection made from New York, N. Y., via C. A. M. 17 (Overnight) Route.

SOUTHBOUND (Daily)	NORTHBOUND (Daily)
LEAVE Chicago, Ill. 5:50 a.m.	ARRIVE Dallas, Tex. 8:45 a.m.
Meane, Ill. 7:25 a.m.	Port Worth, Tex. 9:45 a.m.
St. Joseph, Mo. 8:15 a.m.	Oklahoma City, Okla. 10:10 a.m.
Wichita, Kans. 9:15 a.m.	Ponca City, Okla. 11:10 a.m.
Ponca City, Okla. 10:10 a.m.	Wichita, Kans. 11:10 a.m.
Oklahoma City, Okla. 11:10 a.m.	St. Joseph, Mo. 12:10 p.m.
Port Worth, Texas 12:10 p.m.	Dallas, Tex. 1:10 p.m.

C. A. M. 4—Salt Lake City, Utah, Las Vegas, Nev., Los Angeles, Calif. (600 miles each way), connection made from New York, N. Y., via C. A. M. 17 (Transcontinental) Route and C. A. M. 18.

WESTBOUND (Daily)	EASTBOUND (Daily)
LEAVE Salt Lake City, Utah 9:10 a.m.	ARRIVE Los Angeles, Calif. 7:35 a.m.
Las Vegas, Nev. 10:10 a.m.	Salt Lake City, Utah 3:20 p.m.

F. M. 4—Key West, Fla.; Habana, Cuba. Penn. R.R. train 175 leaves New York, N. Y., at 3:10 p.m. daily; Train 109 at 8:10 a.m. leaves New York, N. Y., at 8:10 a.m. daily. Rates of fare and baggage charges for passengers and freight are as follows: Key West, Fla., to Habana, Cuba, 1st class, \$1.00; 2nd class, 75 cents; 3rd class, 50 cents. Key West, Fla., to Habana, Cuba, 1st class, \$1.00; 2nd class, 75 cents; 3rd class, 50 cents. Key West, Fla., to Habana, Cuba, 1st class, \$1.00; 2nd class, 75 cents; 3rd class, 50 cents.

SOUTHBOUND (Daily)	NORTHBOUND (Daily)
LEAVE Key West, Fla. 7:30 a.m.	ARRIVE Habana, Cuba 9:40 a.m.
Habana, Cuba 8:40 a.m.	Key West, Fla. 6:10 p.m.

C. A. M. 5—Salt Lake City, Utah, via Boise, Idaho to Pasco, Wash., (435 miles each way), connection made from New York, N. Y., via C. A. M. 17 (Transcontinental) Route and C. A. M. 18.

WESTBOUND (Daily)	EASTBOUND (Daily)
LEAVE Salt Lake City, Utah 9:15 a.m.	ARRIVE Boise, Idaho 11:15 a.m.
Boise, Idaho 12:15 p.m.	Salt Lake City, Utah 12:50 p.m.

C. A. M. 6—Chicago, Ill., Detroit, Mich. (237 miles each way), No advantage from New York, N. Y.

SOUTHBOUND (Daily ex. Sundays and Holidays)	NORTHBOUND (Daily ex. Sundays and Holidays)
LEAVE Chicago, Ill. 3:00 p.m.	ARRIVE Detroit, Mich. 4:40 p.m.
Detroit, Mich. 5:40 p.m.	Chicago, Ill. 12:10 p.m.

C. A. M. 7—Chicago, Ill., Detroit, Mich. (237 miles each way), No advantage from New York, N. Y.

EASTBOUND (Daily ex. Sundays and Holidays)	WESTBOUND (Daily ex. Sundays and Holidays)
LEAVE Chicago, Ill. 8:00 a.m. (C.T.)	ARRIVE Detroit, Mich. 1:00 p.m. (C.T.)
Detroit, Mich. 12:00 noon (C.T.)	Chicago, Ill. 3:00 p.m. (C.T.)

C. A. M. 8—Seattle, Tacoma, Vancouver, Wash.; Portland, Medford, Ore.; San Francisco, Fresno, Bakersfield, Los Angeles, Calif. (1099 miles each way). No advantage from New York, N. Y.

SOUTHBOUND (Daily ex. Monday)	NORTHBOUND (Daily ex. Monday)
LEAVE Seattle, Wash. 11:45 p.m.	ARRIVE Los Angeles, Calif. 12:01 a.m.
Tacoma, Wash. 1:30 a.m.	Bakersfield, Calif. 1:30 a.m.
Vancouver, Wash. 7:00 a.m.	Fresno, Calif. 3:00 a.m.
Portland, Ore. 7:00 a.m.	San Francisco, Calif. 5:00 a.m.
San Francisco, Calif. 1:15 p.m.	Medford, Ore. 9:00 a.m.
Fresno, Calif. 1:15 p.m.	Portland, Ore. 11:30 a.m.
Bakersfield, Calif. 4:45 p.m.	Tacoma, Wash. 1:30 p.m.
	Seattle, Wash. 2:00 p.m.

C. A. M. 9—Chicago, Ill.; Milwaukee, La Crosse, Wis.; St. Paul, Minneapolis, Monn. (377 miles each way), connection made from New York, N. Y., via C. A. M. 17 (Overnight) Route.

WESTBOUND (Daily ex. Sunday and Monday)	EASTBOUND (Daily ex. Saturday and Sunday)
LEAVE Chicago, Ill. 5:50 a.m.	ARRIVE Minneapolis, Minn. 2:30 p.m.
Uaukegan, Wis. 6:50 a.m.	St. Paul, Minn. 3:30 p.m.
La Crosse, Wis. 9:30 a.m.	La Crosse, Wis. 4:00 p.m.
St. Paul, Minn. 11:40 a.m.	Minneapolis, Minn. 7:30 p.m.

C. A. M. 11—Cleveland, Youngstown, Ohio; McKeesport, Pittsburgh, Pa. (122 miles each way), No advantage from New York, N. Y.

SOUTHBOUND (Daily)	NORTHBOUND (Daily)
LEAVE Cleveland, Ohio 12:15 p.m.	ARRIVE Pittsburgh, Pa. 2:30 p.m.
Youngstown, Ohio 1:00 p.m.	Youngstown, Ohio 3:15 p.m.
	Cleveland, Ohio 4:00 p.m.

C. A. M. 12—Cheyenne, Wyo.; Denver, Colorado Springs, Pueblo, Colo. (199 miles each way), connection made from New York, N. Y., via C. A. M. 17 (Transcontinental) Route and C. A. M. 18.

SOUTHBOUND (Daily)	NORTHBOUND (Daily)
LEAVE Cheyenne, Wyo. 5:30 a.m.	ARRIVE Pueblo, Colo. 4:00 p.m.
Denver, Colo. 5:35 a.m.	Colorado Springs, Colo. 4:50 p.m.
Colorado Springs, Colo. 7:50 a.m.	Denver, Colo. 6:00 p.m.
	Cheyenne, Wyo. 7:30 p.m.

C. A. M. 17 (Transcontinental)—New York (Hudley Field); Cleveland, Ohio; Chicago, Ill. (723 miles each way).

WESTBOUND (Daily)	EASTBOUND (Daily)
LEAVE New York (Penn. Sta.) 11:00 a.m. E.T.	ARRIVE Chicago, Ill. 8:00 a.m. C.T.
Brunswick, N. J. 12:15 p.m. E.T.	Cleveland, Ohio 11:00 a.m. C.T.
Cleveland, Ohio 1:35 p.m. C.T.	Cleveland, Ohio 12:15 p.m. E.T.
	Brunswick, N. J. 4:45 p.m. E.T.
	New York, N.Y. 7:20 p.m. E.T.
	Gen'l Post Office 7:20 p.m. E.T.

Makes connection with C. A. M. Routes 1, 4, 15, 16, 17, 18, and 19.

C. A. M. 17 (Overnight)—New York (Hudley Field); Cleveland, Ohio; Chicago, Ill. (723 miles each way).

WESTBOUND (Daily)	EASTBOUND (Daily)
LEAVE New York (Penn. Sta.) 8:00 p.m. E.T.	ARRIVE Chicago, Ill. 8:00 p.m. C.T.
Brunswick, N. J. 9:15 p.m. E.T.	Cleveland, Ohio 11:00 a.m. C.T.
Cleveland, Ohio 1:35 p.m. C.T.	Cleveland, Ohio 12:15 p.m. E.T.
	Brunswick, N. J. 4:45 p.m. E.T.
	New York, N.Y. 7:20 p.m. E.T.
	Gen'l Post Office 7:20 p.m. E.T.

Makes connection with C. A. M. Routes 2, 3, and 9.

C. A. M. 18—Chicago, Ill.; Iowa City, Des Moines, Iowa; North Platte, Neb.; Cheyenne, Rock Springs, Wyo.; Salt Lake City, Utah; Las Vegas, Nev.; San Francisco, Calif. (1904 miles each way), connection made from New York, N. Y., via C. A. M. 17 (Transcontinental) Route.

WESTBOUND (Daily)	EASTBOUND (Daily)
LEAVE Chicago, Ill. 7:50 p.m. C.T.	ARRIVE San Francisco, Calif. 7:00 a.m. P.T.
Iowa City, Iowa 9:40 a.m. C.T.	Rock Springs, Wyo. 9:40 a.m. P.T.
North Platte, Neb. 12:35 a.m. C.T.	North Platte, Neb. 12:35 a.m. P.T.
Cheyenne, Wyo. 2:00 a.m. M.T.	Cheyenne, Wyo. 2:00 a.m. P.T.
Salt Lake City, Utah 9:30 a.m. P.T.	Salt Lake City, Utah 9:30 a.m. P.T.
Las Vegas, Nev. 11:05 a.m. P.T.	Salt Lake City, Utah 10:00 a.m. P.T.
Salt Lake City, Utah 9:30 a.m. P.T.	Salt Lake City, Utah 10:00 a.m. P.T.
Elko, Nev. 11:05 a.m. P.T.	Reno, Nev. 1:30 p.m. P.T.
Elko, Nev. 11:05 a.m. P.T.	Reno, Nev. 1:30 p.m. P.T.
Sacramento, Calif. 2:45 p.m. P.T.	San Francisco, Calif. 4:30 p.m. P.T.

Makes connection with C. A. M. Routes 4, 5 and 12.

TABLE E.—Trips completed and uncompleted on civil airways January-June, 1927

Route	Trips scheduled	Completed	Incompleted	Not started
San Francisco-New York	362	1,182	150	0
Chicago-New York overnight	362	1,206	31	22
New York-Houston	30	241	20	41
M. St. Louis-Chicago	210	241	9	0
M. Chicago-Chicago	362	287	75	0
M. Los Angeles-Salt Lake City	362	318	13	1
M. Salt Lake City-Pikeville	332	278	26	28
M. Salt Lake City-Pikeville	362	318	13	1
M. Detroit-Cleveland	351	528	0	46
M. Detroit-Chicago	409	294	1	11
M. Chicago-Twin City	310	198	112	0
M. Cleveland-Pittsburgh	112	131	7	2
M. Cheyenne-Pueblo	362	362	0	0
M. Pittsburgh-New Orleans	321	321	0	0
M. Seattle-Victoria	112	138	4	0
Detroit-Grand Rapids	309	293	1	10
Louisville-Cleveland	74	70	2	2
Detroit-Buffalo	152	112	0	10
Total	5,272	4,587	506	79

M—Mail contract routes

¹ Failures to start or complete trips were ascribed to the following causes: Weather and darkness 523, structural, 4; mechanical, 28; shortage of equipment, 30; total, 685.
² All trips on which mails were trained over any portion of the trip are counted as incomplete, but the mails were advanced practically in all instances.

TABLE F.—Air mail contract rates

Route	Rate per pound
New York-Boston	\$3.00
Chicago-St. Louis	2.53
Dallas-Chicago	3.00
Los Angeles-Salt Lake City	3.00
Salt Lake City-Pikeville	3.00
Detroit-Cleveland	1.08
Detroit-Chicago	1.08
Los Angeles-Salt Lake City	2.81
Butte route	3.00
Chicago-Minneapolis-St. Paul	2.75
Cleveland-Pittsburgh	3.00
Pueblo-Cheyenne	3.00
Atlanta-New York	3.00
Chicago-San Francisco	1.50
Chicago-New York	1.24
Cleveland-Albany	1.11
Laredo-Dallas	2.89
Galveston-Dallas	2.89
New Orleans-Atlanta	1.75
Average rate per pound	2.406
Foreign routes	
Havana-Key West	1.405
Pittsburgh-New Orleans	(¹)
Seattle-Victoria	(¹)

¹ Up to 1,000 miles; 15 cents for each 100 miles over 1,000.
² Up to 1,500 pounds a day, thereafter a reduction of 5 per cent for each additional 500 pounds.
³ All mail handled on these routes is ordinary first class at 2-cent rate.
⁴ The rate on the Pittsburgh-New Orleans route is \$110 per pound trip, on the Seattle-Victoria route, \$190 per pound trip.

TABLE II.—Aircraft production—Calendar years 1925 and 1926

Item	1925	1926
Number of establishments	1,67	44
Products, total value	\$24,161,752	\$12,524,719
Airplanes:		
Number	1,179	711
Value of work done during year	\$8,771,077	\$5,908,335
Scaplines:		
Number	47	78
Value of work done during year	\$99,950	\$765,324
Aircraft of all classes under construction at close of year:		
Number	508	259
Value of work done during year	\$2,377,769	\$1,428,447
Engines made by establishments reporting:		
Water-cooled—		
Sold separately or for sale—		
New construction—		
Number	444	
Value of work done during year	\$3,527,432	
Rebuilt and reassembled—		
Number	770	
Value of work done during year	\$548,160	
Installed in own aircraft—		
New construction—		
Number	62	
Value of work done during year	\$20,800	
Rebuilt and reassembled—		
Number	33	
Value of work done during year	\$21,750	
Air-cooled—		
Sold separately or for sale—		
New construction—		
Number	325	
Value of work done during year	\$2,847,988	
Rebuilt and reassembled—		
Number	3	
Value of work done during year	\$582	
Installed in own aircraft—		
New construction—		
Number	3	
Value of work done during year	\$1,875	
Engine parts made during year and engines under construction at close of year, value	\$260,932	
Aircraft parts, value	\$4,553,910	\$3,508,460
All other products, including repair work, value	\$829,527	\$914,153
Engines purchased for installation:		
New construction—		
Number	842	
Value of work done during year	\$548,560	
Rebuilt and reassembled—		
Number	358	
Value of work done during year	\$88,286	

¹ Includes 3 establishments with products valued at less than \$5,000 and 5 establishments engaged primarily in the manufacture of aircraft engines.

² Does not include second and third products of other industries valued at \$250,462.

³ Includes 54 engines of variable output, and 171 rebuilt and reassembled.

⁴ Includes 2 rebuilt and reassembled.

⁵ No data available for aircraft engines for 1925 as the output of establishments primarily engaged in the manufacture of aircraft engines is included in the statistics for the "engines and water wheels" industry in the regular biennial censuses.

TABLE G.—Activities of "air service operators," calendar year 1926

Item	Reported	Estimated	Total
Number of operators engaged	250	335	585
Passengers carried for hire	288,470	388,097	676,567
Passengers carried free	40,745	53,605	94,350
Airplane-hours flown	99,978	134,335	234,313
Flights made	175,701	240,198	415,899
Students trained	1,910	2,556	4,466
New planes produced	63	87	150
Planes renewed	502	670	1,172
Planes in service	572	770	1,342
Airplane-miles flown (based on 80 miles per hour)	7,998,240	10,748,400	18,746,640

TABLE I.—Aircraft products, by number and value, calendar years 1919-1926¹

Item	1926	1925	1923	1921	1919
Total value	\$24,161,752	\$12,775,181	\$13,142,364	\$7,430,824	\$14,372,643
The aircraft industry	\$24,161,752	\$12,524,719	\$12,945,263	\$6,652,981	\$14,372,643
Secondary products of other industries	(²)	\$250,462	\$197,101	\$777,843	(³)
Airplanes:					
Number	1,179	711	505	290	432
Value	\$8,771,077	\$5,908,335	\$6,166,218	\$3,818,340	\$3,466,452
Scaplines:					
Number	7	78	82	12	280
Value	\$99,950	\$765,324	\$1,570,851	\$314,768	\$4,580,016
Under construction at close of year (both classes)					
Number	508	259	281	374	341
Value	\$2,377,769	\$1,428,447	\$1,339,737	\$966,322	\$1,658,670
Parts and engines for sale	12,088,429	3,794,885	2,839,294	801,619	2,601,609
All other products, including repair work, value	829,527	878,190	1,226,264	1,429,775	2,065,610

¹ The census of manufactures was taken at five-year intervals prior to 1919, but has since been taken at two-year intervals. The census of the aircraft industry for 1926 was a special one. The statistics for the aircraft industry were not published in detail for years prior to 1919. At the census for 1914, 16 establishments reported the manufacture of aircraft and parts. The production of airplanes, scaplines, and parts for that year was valued at \$481,022; the receipts for repair work amounted to \$209,481; and the value of "all other products" was reported as \$99,409. The data for any establishments engaged in the manufacture of aircraft in 1909 were included with those for manufacturers of motor cycles, bicycles, and parts.

² Includes output of establishments with products valued at less than \$5,000 and of 5 engaged primarily in the manufacture of aircraft engines.

³ Includes \$10,993 reported by 4 establishments, each having products valued at less than \$5,000.

⁴ No data.

⁵ Parts only.

⁶ Experimental work, pontoons, airships, automobile bodies, sea sleds, and other miscellaneous items.

TABLE J.—United States exports of aeronautical products, calendar years 1922-1927

Item	Number	Value	Item	Number	Value
1922			1925		
Planes	37	\$156,630	Planes	80	\$511,282
Engines	147	72,819	Engines	73	179,783
Parts for planes	265,481		Parts for planes	101,584	
Total value	494,930		Total value	783,659	
1923			1926		
Planes	48	309,051	Planes	80	303,149
Engines	80	65,558	Engines	297	573,732
Parts for planes	58,949		Parts for planes	150,323	
Total value	433,558		Total value	1,027,210	
1924			First half 1927:		
Planes	59	412,738	Planes	19	311,610
Engines	146	219,609	Engines	69	123,892
Parts for planes	165,926		Parts for planes	189,178	
Total value	798,273		Total value	624,680	

TABLE K.—Fatalities in airway operations and airplane miles per fatality, calendar years 1918-1927

FATALITIES IN AIRWAY OPERATIONS								
Calendar year	Post-office mail			Contract mail			Other airway operations	
	Miles*	Fatalities		Miles †	Fatalities		Miles	Fatalities
		Pilots	Passengers		Pilots	Passengers		
1927 (6 months)	1,239,394	1	0	1,399,720	2	1	96,196	0
1926	2,584,056	1	0	1,959,144	3	1	77,680	0
1925	2,521,758	1	0	(2)	(2)	(2)	(2)	(2)
1924	2,161,077	3	0	(2)	(2)	(2)	(2)	(2)
1923	1,870,422	5	1	(2)	(2)	(2)	(2)	(2)
1922	1,756,803	1	0	(2)	(2)	(2)	(2)	(2)
1921	1,912,733	7	2	(2)	(2)	(2)	(2)	(2)
1920	1,018,444	8	6	(2)	(2)	(2)	(2)	(2)
1919	461,295	4	0	(2)	(2)	(2)	(2)	(2)
1918	102,548	1	0	(2)	(2)	(2)	(2)	(2)
Total	15,657,530	32	9	3,357,864	5	2		

AIRPLANE MILES PER PILOT FATALITY

Calendar year	Post-office mail	Contract mail	Other airway operations
1927 (6 months)	1,239,394	699,800	0
1926	2,584,056	632,715	0
1925	2,521,758		
1924	720,359		
1923	374,084		
1922	1,756,803		
1921	2,161,077		
1920	141,656		
1919	115,424		
1918	102,548		

* Miles flown both in scheduled operations and in ferry, test, and other unscheduled flights.

† Miles flown in scheduled operations, not including ferry, test, and other unscheduled flights.

² No contract mail prior to 1926 save for the 2 foreign routes from New Orleans and Seattle. No casualties on either of these.

³ From 1911 to 1925 there have existed from time to time passenger lines between various points in the United States, but there is no official record of their operations.

MEDICAL EXAMINERS for PILOT'S LICENSE

THE following is a complete list of Medical Examiners authorized by the Department of Commerce to make the physical examinations of airplane pilots. This list is complete as of October, 1927. Additions will be made from time to time.

Alabama

Dr. E. M. Robinson and Dr. Elbert P. Green, Birmingham; Dr. Bruce F. Holding, Montgomery; Dr. Toxey D. Haas and Dr. J. C. O'Gwynn, Mobile.

Arizona

Dr. William A. Schwartz and Dr. Thomas W. Woodman, Phoenix; Dr. Edward J. Gotthelf and Dr. Bascom F. Morris, Tucson.

Arkansas

Dr. Phil E. Thomas, Jr., Little Rock.

California

Dr. Benjamin J. Edger, Jr., and Dr. Curle L. Callander, San Francisco; Dr. Theodore C. Lyster and Dr. Isaac H. Jones, Los Angeles; Dr. Robert M. Jones, Bakersfield; Dr. T. H. Trowbridge, Fresno; Dr. L. D. Mottram, Modesto; Dr. Charles B. McKee, Sacramento; Dr. Samuel A. Durr, San Diego; Dr. Philip C. Means, Santa Barbara.

Colorado

Dr. John S. Chase, Denver.

Connecticut

Dr. William B. Smith, Weathersfield and Hartford.

Delaware

Dr. William F. Bonner, Wilmington.

District of Columbia

Dr. Bernard L. Jarman, Washington.

Florida

Dr. Ralph N. Greene and Dr. A. K. Wilson, Jacksonville; Dr. T. W. Hutson and Dr. Bascom M. Palmer, Miami; Dr. Whitman C. McConnell and Dr. J. H. Cooper, St. Petersburg.

Georgia

Dr. David D. Moncrief, Atlanta; Dr. St. Julien de Caradeuc and Dr. E. Carson Demmond, Savannah; Dr. Francis B. Blackmar and Dr. J. T. Tidwell, Columbus.

Idaho

Dr. Lloyd E. Patrick and Dr. George H. Wahle, Boise.

Illinois

Dr. Fred M. F. Meixner and Dr. Carroll B. Welton, Peoria; Dr. Walter W. Greaves, La Salle; Dr. Chester C. Sloan, Moline; Dr. Wm. L. Hanson, East St. Louis; Dr. August Anderson, Dr. Wm. P. MacCracken, and Dr. George W. Woodnick, Chicago; Dr. Harold M. Camp and Dr. Frank C. Winters, Monmouth; Dr. Bernard O. Bendixen, Streator.

Indiana

Dr. Wilbur F. Smith, Indianapolis; Dr. Irving H. Willett, Ft. Wayne.

Iowa

Dr. William W. Pearson, Dr. J. A. Downing and Dr. E. B. Winnett, Des Moines; Dr. Haramont N. Anderson, Woodbine; Dr. John I. Marker, and Dr. Gordon F. Harkness, Davenport; Dr. Frank P. Ringle, Cedar Rapids; Dr. T. R. Gittins and Dr. John W. Schwartz, Sioux City; Dr. C. E. Chenoweth and Dr. George M. Crabb, Mason City.

Kansas

Dr. O. L. Cox and Dr. O. L. Garlinghouse, Iola; Dr. C. H. Briggs, Wichita.

Kentucky

Dr. Judd E. Hammond, Lexington; Dr. Benjamin D. Choate, Louisville.

Louisiana

U. S. Marine Hospital No. 14, New Orleans; Dr. Dorf Bean and Dr. R. D. McIntyre, Shreveport.

Maine

Dr. S. J. Beach, Portland.

Maryland

Dr. B. B. Kneisley, Hagerstown; Dr. J. K. Cowherd and Dr. G. O. Sharrett, Cumberland; Dr. J. C. Travers and Dr. H. Roland Carroll, Baltimore.

Massachusetts

Dr. Philip Grabfield and Dr. J. Herbert Waite, Boston; Dr. Earl E. Flippen and Dr. William F. Holzer, Worcester.

Michigan

Dr. D. S. Brachman and Dr. Joseph L. DeRosier, Detroit; Dr. F. C. Warnshuis, Grand Rapids; Dr. Retla H. Alter and Dr. Wayne A. Cochrane, Jackson; Dr. Reader J. Hubbell, Kalamazoo.

Minnesota

Dr. A. J. Herbolsheimer, Minneapolis; Dr. M. A. Shillington, St. Paul.

Missouri

Dr. Maurice L. Greene, St. Louis; Dr. Wade H. Miller, Kansas City; Dr. W. M. Bickford and Dr. S. P. Simmons, Marshall; Dr. Charles C. Coats and Dr. W. H. Minton, St. Joseph.

Montana

Dr. Edward C. Person, Butte.

Nebraska

Dr. J. A. Tamisiea, Omaha; Dr. Charles H. Arnold, Lincoln; Dr. C. W. Keith, Edgar.

Nevada

Dr. Arthur E. Landers and Dr. David Shaw, Reno.

New Hampshire

Dr. Harold J. Connor and Dr. A. L. MacMillan, Jr., Concord.

New Jersey

Dr. Charles C. McGivern, Atlantic City; Dr. C. J. Sullivan and Dr. Howard C. Voorhees, New Brunswick.

New York

Dr. Conrad Berens, Dr. William J. Francis, Dr. Erwin L. Ray, New York City; Dr. Luther H. Kice, Hempstead, L. I.; Dr. Edwin S. Ingersoll, Dr. Clarence P. Thomas and Dr. Eldred W. Kennedy, Rochester; Dr. Howard Osgood, Dr. Edward H. Kraemer and Dr. Otto S. McKee, Buffalo; Dr. James W. Fleming and Dr. Walter S. Pugh, Utica; Dr. A. Wallace Todd, Albany; Dr. Hudson J. Wilson, Ithaca; Dr. John S. Hickman, Jamestown.

North Carolina

Dr. Wm. B. Dewar and Dr. Vennie M. Wicks, Raleigh.

North Dakota

Dr. George M. Constans, Bismarck; Dr. C. N. Callander, Fargo.

Ohio

Dr. Serge Androp, Gallipolis; Dr. J. C. Root, Akron; Dr. Frederick A. Snyder and Dr. Harry M. Strachan, Cleveland; Dr. Percy B. Wiltberger, Columbus; Dr. James H. Smith, Toledo; Dr. John U. Buchanan, Youngstown; Dr. Alfred G. Farmer, Dayton; Dr. J. Henry Schroeder and Dr. William J. Topmoeller, Cincinnati.

Oklahoma

Dr. S. E. Mitchell, Muskogee; Dr. Theodore G. Wails, Oklahoma City; Dr. James C. Braswell and Dr. Samuel Goodman, Tulsa.

Oregon

Dr. Ralph Fenton and Dr. William House, Portland; Dr. Joycelyn J. Emmons and Dr. James C. Hayes, Modford.

Pennsylvania

Dr. Edward H. Bedrossian and Dr. J. V. Allen, Jr., Philadelphia; Dr. G. L. Lavery, Harrisburg; Dr. George R. Harris, Pittsburgh.

Rhode Island

Dr. William N. Hughes, Providence.

South Carolina

Dr. C. W. Kollock, Charleston; Dr. Percy H. Brigham, Dr. Simons R. Lucas and Dr. Marion R. Mobley, Florence; Dr. Foster M. Routh and Dr. Walter Bristow, Columbia.

South Dakota

Dr. J. Douglas Alway, Aberdeen; Dr. Edmund D. Putnam, Sioux Falls.

Tennessee

Dr. J. B. Hibbitts, Jr., Nashville; Dr. John J. Shea and Dr. James B. Stanford, Memphis.

Texas

Dr. George E. Morris, Dallas; Dr. Louis D. Pawelek, Houston; Dr. Thomas J. Cross, Fort Worth; Dr. Charles H. Brownlee, Austin; Dr. Wm. R. Jamieson, Dr. Franklin P. Schuster, Dr. Stephen R. Schuster, El Paso; Dr. Eldridge Adams and Dr. W. A. Ostendorf, San Antonio; Dr. J. Edward Quay and Dr. Cluto E. Rayburn, Waco.

Utah

Dr. Mazel Skolfield, Salt Lake.

Virginia

Dr. P. G. Hamlin, Williamsburg; U. S. Marine Hospital No. 82, Norfolk; Dr. Nelson Mercer and Dr. R. E. Mitchell, Richmond.

Washington

Dr. Elmer E. Langley, Spokane; Medical Officer in Charge, U. S. Marine Hospital No. 17, Port Townsend; Dr. Leland L. Bull, Seattle; Dr. G. Francis Hilton, Wenatchee.

West Virginia

Dr. E. L. Jones and Dr. D. A. MacGregor, Wheeling.

Wisconsin

Dr. Gilbert E. Seaman, Milwaukee; Dr. George L. Ross, Racine; Dr. Albert R. Tormey, Madison; Dr. E. E. Gallagher and Dr. V. Lee Simones, LaCrosse.

Wyoming

Dr. Allan McLellan, Casper; Dr. Walter M. Lacey and Dr. George L. Strader, Cheyenne.

THE SLOTTED WING

By
Dr. Michael Watter

SUCH a remarkable degree of perfection has been attained in airplanes that their mechanical causes of disaster are no more numerous than in other vehicles. The operation of airplanes, however, is entrusted to men and it is their errors of judgment that cause the largest per cent of accidents. Just as in other means of transportation it will probably be impossible to totally eliminate this potential danger but it is within our means to have this probability made more remote by perfection of control, thereby increasing the ease of operating airplanes.

Landing and slow flying are by far the most dangerous phases of flight, the first because of the relatively high speed with which the airplane approaches the ground and the latter because the pilot is liable to stall the plane with a consequent loss of speed and control. Decrease in landing speed alone would not solve the problem; a plane capable of flying slowly might not be controllable at this low speed. This is particularly important because of a tendency of some airplanes to quickly fall into a spin while in a stalled attitude.

There are a number of devices for increasing the maximum lift of airfoils so as to decrease the landing speed of an airplane but only a few of them have been found technically practical. Any device for the increase of maximum lift can be used to improve the lateral control by operating it separately on two sides of the span but in a number of cases it will be found that mechanical complications are such as to make it impractical.

Before describing the various means of increasing the maximum lift of an airfoil it will be of interest to review the working principle of a lifting profile. The explanation of the phenomena will be clearer if, using the principle of relative motion, one will consider a stationary airfoil invested by a uniform wind instead of thinking of the actual condition of an airfoil moving through the air.

In order to understand the lifting action of a wing let us imagine at the leading edge of the airfoil two particles of air; one particle has to travel along the upper camber of the profile while the second must follow the under camber. Since the air cannot break (the law of "continuity of flow") the upper particle will be forced to travel with a speed higher than that of the lower one. But it is a known fact in hydrodynamics that whenever the speed is high the pressure is low (Bernoulli's theorem) and, therefore, the pressure on the upper side of the wing is lower than on the under side. As a result of this difference of pressure there is a force acting on the wing as long as there is a relative motion of the wing and the air and as long as the upper particles follow substantially the upper contour of the wing profile.

The stable condition of flow continues with increase of angle of attack until a critical angle is reached at which the air particles do not follow the upper camber but detach from

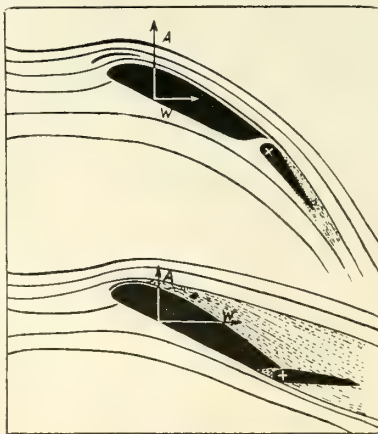
the top of the wing. At this point the lift suddenly drops and it is this point (the "burburle" point) which determines the stalling speed of the airplane.

Having in mind the picture of airflow around an airfoil we can consider some of the methods used to increase the lift of a lifting profile. The simplest method is to increase the area. This, however, is a crude way and it entails mechanical complications which are likely to offset any possible gain. Another method is to increase the camber, that is, increase the curvature of the upper contour and gain lift because of aerodynamical factor of flow (increased speed of air particles traveling along the upper contour). The change in camber can be achieved in a simpler mechanical way by using a trailing edge flap or leading edge flap gears. The latter, however, was found to be mechanically too complicated and aerodynamically not as good as the former.

Mr. Fokker has developed a series of wings which by virtue of their profile, while not doing away with the burble point, have the ability to conserve their maximum lift through a considerable range of angles.

All the means of increasing the lift of an airfoil described above are based on variations of the form of the profile without attempting to remedy the critical point of airflow as such. From the explanation of the burble point phenomena it is clear that should we be able to prevent the detachment of air particles from the top of the wing the flow would be forced to follow the upper camber and so the lift would continue to increase with increase in the angle of attack.

At present we have three different ways of attaining this end. One is to blow away mechanically the turbulent air which sets up in motion between the detached flow and the upper surface of the wing; second is to suck it away, but also mechanically. In both cases it is necessary to have blowers which require considerable expenditure of power and which may fail to function when most needed. A third and much better way is to prevent the airflow from detaching from the upper contour by deviating it in the desired direction. This end is achieved by fitting at the leading edge a specially shaped winged airfoil which when opened creates a slot between it and the main contour. The beneficial effect of this slot can be partly explained by



These figures show the action of the automatic slot-aileron control. The upper figure refers to the wing which is raised in a bank; the front slot is open and aileron is lowered which results in increased lift. The lower figure shows what happens to the lowered portion of the wing; the aileron is raised which shuts the front slot, consequently the lift drops and the turbulent portion of the air causes increase in drag adding a yawing moment in the desired direction.

the Venturi effect and the deviation of airstream due to the downwash from this auxiliary airfoil. The usefulness of the front slot, however, is fully gained only by fitting the airfoil with a trailing edge flap gear which when opened also forms a similar slot with the central portion of the wing. This slot also naturally helps to prevent the detachment of the airflow. The combination of the two slots is remarkably efficient and their combined effect results in an increase of maximum lift of from 70 to 95 per cent.

The invention of the slotted wing is an outstanding

event and its practical application will expedite the progress of commercial aviation. The following is an extract from Dr. Lachmann's article in Z.FUM (English translation, N. A. C. A. Technical Memorandum 298) on the effectiveness of the slotted wing: "The effect of the slot with an aileron deflection of zero degree (neutral) is very small. Only a small aileron deflection is required, however, to produce a great increase in the lift. On the average the lift increase due to the auxiliary wing is about 40 per cent above that produced by the aileron alone. On the basis of a maximum lift coefficient of about 1.5 (absolute units) for the unslotted wing section, the lift increase resulting from the combined action of the slot and the aileron is about 95 per cent. (On this basis the angle of attack of the wing was 20.4 degrees for the case of maximum lift). The corresponding reduction in the landing speed is about 30 per cent."

The slotted wing was invented simultaneously by Mr. Handley Page in Great Britain and Dr. Lachmann in Germany and at present both are engaged in perfecting this gear. The details of their researches are not available but recent information on the subject indicates that Mr. Handley Page is concentrating his efforts on perfecting the slotted wing mainly as a means of improved lateral control. The drawback of the slotted wing as it appeared in the first years of its existence was in the fact that it was operated mechanically similarly to the operation of an aileron. This entailed many mechanical complications, the device being heavy and sluggish to actuate. Only recently it became known that Mr. Handley Page and his associates were working on the *automatic* slot which obviated the necessity of any special mechanism. The auxiliary front airfoil is located and pivoted in such a way that the difference in pressure itself opens the slot, at the angle just preceding the stalling condition of the wing. Besides the front airfoil and slot there is a rear slot between the central portion of the wing and aileron. The latest information on Handley Page lateral control is that the front airfoil and aileron are connected with a cable or pull and push rod in such a way that when the aileron is lowered the motion of the front airfoil is not obstructed and it remains automatic as before, but when the aileron is raised then the connection comes into play and shuts the front slot on that side of the wing. Lateral control therefore is obtained as follows: When the pilot, flying at a very low speed, desires to turn, he operates the control stick as usual, which results in the raising of the aileron on one side and lowering it on the other. Both of the slots on the latter are open which causes increase of the lift on that side of the wing and the resulting effective rolling moment, shutting off the front slot on the opposite side causes

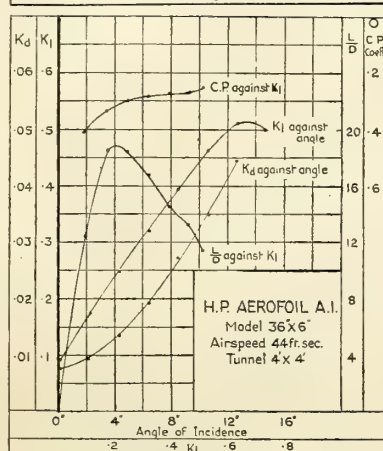
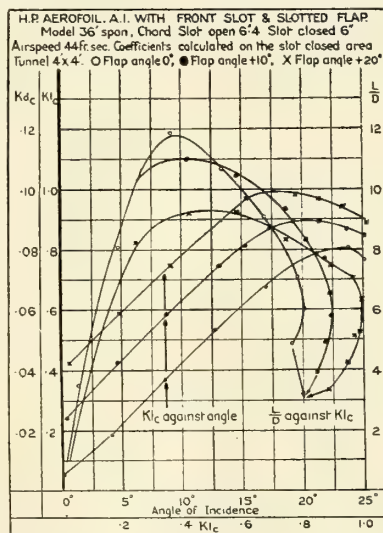
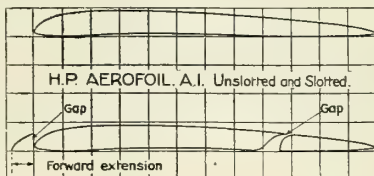
naturally an appreciable drop of lift on that side. An additional advantage of the slot control is the absence of an unfavorable yawing moment.

With an ordinary aileron control the drag is increased on the side where the aileron is depressed. This is very undesirable since the resulting yawing moment tends to turn the machine in the direction opposite to the intended one. The explanation of the spin lies exactly in this dangerous characteristic of an ordinary aileron effect. Imagine an airplane maneuvering close to the ground at a low speed. The wings are working close to the stalling angle and at the instant when the pilot desires to turn and goes through the usual maneuvers, the side which the pilot intended to raise suddenly passes the burble point, the lift drops instantly and the unfavorable yawing adds its effect; this side of the wing lowers and the airplane swings into a tail spin. If the altitude should be such that the pilot is unable to come out of the spin quickly the result is an inevitable crash. When wings are equipped with a slot and aileron control the unfavorable yawing moment is absent and there is a powerful rolling in the desired direction.

There are several ways in which this newly invented automatic front slot may be used in an airplane. The four most promising combinations would be: (1) Auxiliary front airfoil extends over the portion of the wing fitted with ailerons. (2) Auxiliary front airfoil extends over the length of the semispan. Ailerons extend also over the length of the semispan and can be operated as trailing edge flaps when desired. (3) Outboard portion of the auxiliary front airfoil is automatic—inboard controllable, and is operated only when it is desired to decrease the stalling speed of the craft; it is connected with a trailing edge flap fitted over the inboard portion of the wing. Operation of the front slot and aileron the same as in case 1. (4) The auxiliary front airfoil extends over the length of the semispan and is automatic in action. At the trailing edge there are independently operated ailerons and flap as in case 3.

In Great Britain such faith is placed in slot and aileron control that this device is being fitted on all Bristol fighter airplanes. It appears that they intend to use the combination of the auxiliary airfoil extending over a part of the semispan occupied by the aileron. The figures reproduced here are only to illustrate the effect of the slot. The front airfoil at present is usually given a normal lifting profile instead of a curved plate as shown.

The importance of the slotted wing will not be limited only to the main surfaces and there will be probably a number of other applications and among them the slot possibly will be used in control surfaces in large airplanes.



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VICTORY YEAR 1927

ONE achievement after another for aviation, not only in America but everywhere where progressive man has gone into the air, indicates that the twelve months just past have been triumphant for the airplane.

"Over the Divide"—that was the victorious cry from the lips of the forty-niners when they could see westward from the Rockies as they journeyed from the east.

Well American aviation has gone "Over the Divide," it has been all up grade until now, it has now struck the slope which will mean high speed development comparable with the rapidity of airplane travel.

1927 has put us across the hardest spots on the road. From time to time in the future the going will be rough but American aviation has struck its gait, it will keep it up and make it faster year by year. 1927 may truly be called the victory year in aviation and the best part of it is that as it passes it's obvious that the next year will be even better. Now let us get together, pull together and do the really unusual. Let us make a second victory year of greater accomplishments than that which is now passing into history.

WHY DOES THE NAVY SLIGHT ITS OWN AIRMEN?

NOTHING should surprise us that the Navy does; but we cannot but be somewhat dazed when we reflect upon the recent concealment by the old-line sea-going officers of the Navy and their well paid publicity and propaganda dispensers of the achievements by younger, better men than they—airmen of their own service who officially but not publicly the other day proved conclusively the foolishness of battleships in the warfare of this day and age, not to speak about the warfare of to-morrow.

The Bureau of Ordinance issued an order through the Bureau of Aeronautics to designate six planes of the Fifth Fighting Squadron to hold experimental bombing on a high speed target towed by the *U. S. S. Putnam* at the Navy Bombing Grounds off the Capes, during the week of October 17. The *U. S. S. Breck* was detailed for observation; officers from the Third Fighting Squadron and First Torpedo Plane Squadron were detailed for observers. Two hundred and fifty 17½ demolition bombs were dropped; 5 shots from each plane from 500 feet, 1000 feet, 1500 feet, and 2000 feet; 21 bombs were dropped from 2000 feet, 6 of which were dropped from 2 planes in salvo firing. The planes used for this practice were FCC 3 Curtiss Hawks with D-12 engines, piloted by Lieutenants Dillon, Warwick, Feher, Ackers, Barner and Rice.

From an aircraft bombing standpoint the practice was an enormous success and not one word to the press about it. It might help the aircraft appropriation and it might lessen the cruiser appropriations. All this triumph of aircraft over watercraft was carefully suppressed.

We do not believe that the sun actually will stand still because it has been ordered so to do by that Joshua who now sits at the Naval Secretary's desk and tries under the leadership of naval officers with less brains and progress than Magruder to turn back the hands of time and model the American Navy of 1928 upon the lines which Perry found effective when he fought the battle of Lake Erie.

LET AMERICAN AIR BE ALL AMERICAN

THE sale of foreign built planes assembled in the United States and sold as American built product is becoming a real public scandal. After all the distressful and devoted years which the American manufacturers have gone through in order to establish a completely home made business—home made from its superlative and inventive genius down to the last sliver of its wood, the throb of its engine, the spark of its magneto, the ounce of its metal.

We should be especially careful now not to let some shrewd foreigner come here, organize an American company, put a few of our citizens on its board of directors, and enjoy the same privileges as those who have invested heavily, and labored honestly and conscientiously for many long years without profit so that aviation might live and grow in the United States.

American labor should not be compelled to compete with the poorly paid labor of Europe.

At present we have no law forbidding the importation of unassembled aircraft. We should have such a law. It would serve to get us into a good habit which might save our bacon in the event of war. The use here of foreign built and American assembled planes should be prohibited.

The Army and Navy should stop at once the purchase of any but 100 per cent American built planes. American capital available for the airplane industry should be invested in American concerns solely and absolutely.

There is no field of activity wherein 100 per cent Americanism is as definitely needed as that in which our airplanes operate.

As to the ability of our American aircraft manufacturers to equal in quality European built product, a careful examination proves that not one of the three-motor jobs built in a 100 per cent American factory have to date cracked up.

MacCRACKEN HAS DONE IT AGAIN

WHEN you want action in the aeronautic industry, results actually accomplished, call on Secretary MacCracken. During his brief tenure of office he has rendered more constructive effort in behalf of aviation than any other individual in a like time to date. While others are thinking about it, Bill is up and doing it.

The industry knew early in the year that the Pan-American Conference was to be held. No effort or plan was made to entertain the delegates or give an opportunity to the aeronautic industry to show its product.

MacCracken stepped into the picture, called a conference in Washington and in a few hours had a well executed plan under way, with the result that one of the best air shows on record was held in Washington during the visit of our friends from the other American nations.

Now, he pulls another by getting the industry together, where they can talk man to man, discuss their problems, iron out their difficulties, and prepare for the biggest year that aviation ever has known.

Would that we had MacCrackens in every department in Washington!

A NOD AND A WINK

SPECIAL TO AERO DIGEST:

Hops Field, Long Island, April 1, 1930—The Great Air and Space Derby from the earth to the moon for the prize of one million Russian roubles offered by Fuller Dough, millionaire yeast king, starts to-day. Fifty-seven airplanes, amphibians, dirigibles, helicopters, rocket-planes, balloons, and other aerial vehicles already are entered in the Derby and are lined up at Hops Field ready for the start. And it is reported that at the last minute seventeen experimental contraptions will be rushed to the field for one-minute inspections by Major Clarence M. Young and Inspectors of the Department of Commerce before they hop off for the moon or eternity, the destination being optional with the pilot.

"The idea of bringing these seventeen entries to the field one minute before the race starts is a novel one," said Inspector Scotty (Camel Corps) Breingan. "It is designed to interest and amuse the Department of Commerce, and to test to the utmost the ability and the agility of our inspectors. Chief Inspector Ralph G. Lockwood and his merry men have undergone a period of intensive instruction under trainer Muldoon, and are confident that they are able to leap over, around, under, and through any airplane or near-airplane in a space of time estimated at 53 seconds. So thorough has been their training that the slowest inspector can examine any airplane in 59 seconds, and any pilot in 17 seconds. It takes just a fraction of a second longer to examine navigators, because they answer slower—though in fairness to them it must be admitted that they get lost just as quickly as the pilots."

The scene at Hops Field to-day beggars description—and some of the contestants. There are machines everywhere, taxiing about, standing still, making test flights, jumping into the air, into the newspapers, into oblivion. Each one is accompanied, on the typewriter, by its press agent, who is now a standard part of the equipment of any airplane doing other than merely useful commercial work. In fact, all strictly commercial planes have been banished from Hops Field to make room for Grover Whalen and a battery of reporters and photographers.

A bedlam of sound fills the air—it is almost completely full. You could hardly squeeze another sound into it. The roars of the motors, the roars of the crowd, the roars of the press agents, blend into a stunning diapason of sound that batters the eardrums and then, bouncing aloft, slams itself against the roofs of the hangars and rolls into the gutters with a splash.

Conversation amid this uproar is, fortunately, almost impossible. One catches fragments of remarks—no more. Someone shouts, "Aviation is here at last!" Someone else yells, "Where is aviation?" Some say it is here, some there, some nowhere. Nobody agrees with anybody else. It is a typical flying field. George S. Ireland was heard to roar at a friend, "If I had all the money that's been spent foolishly on aviation I could do something for aviation." The friend was heard to reply, "If I had that much, I wouldn't be in aviation." And George said, "Neither would I." The famous Al Williams was rushing from reporter to reporter, shouting, "People aren't thinking avia-

At Humanity's Hankering for Personal Publicity, and Its Possible Effect upon Aviation as Indicated By the Delirium Derby to the Moon

By

by Caldwell

tion—they're feeling it." And someone yelled, "How did you think up that one?" Williams rushed away, looking frantically for an engineer who could design a pair of floats for a racing plane. He never found him.

"This Air Derby," said Mr. Fuller Dough, when interviewed to-day at Hops Field, "is inaugurated solely to promote aviation, and not for publicity purposes—not at all! The only reason I have retained the services of Messrs. Hokum and Hooley, the Public Relations Counsel, is to keep my name out of the papers. I don't want to be mentioned. 'Boys,' I said, in my kindly way, 'don't mention me—unfavorably.' They smiled their acquiescence."

Mr. Dough laughed heartily. "Ha, ha!" he ha-haed. "That's a big word for me to use, for I started life as a simple boy. You might mention to your readers that I started as a very simple boy—as quite a small, poor boy—or a poor small boy. I am a self-made man. But I do not want publicity, either for myself or for the Dough Yeast Company, which already is so well known by the slogan, 'From Dough to Doughnut in Two Hops.' Why should I seek publicity for my yeast?"

Mr. Dough laughed heartily and continued: "What I seek to do with this Derby to the Moon is to promote aviation—and we have a new stock issue coming out in Wall Street next week. I just happened to remember it. I am interested in aviation—in seeing things rise. Ever since I was a small boy—and I was small, even for a boy—I have been interested in seeing things rise. I recall when, as a mere toddler—in fact, when I could just barely toddle—I watched my mother setting the bread to rise. It rose very, very slowly—not much faster than one of Glenn L. Martin's bombing planes. Just for an experiment—I inherited my experimental leanings from my father, who was a practising physician—I pushed the rising bread down. It stopped rising at once and settled sullenly to the bottom of the pan with a most discouraged look about it.

"Just at that moment," said Mr. Dough, with a merry twinkle in his eye—he lost the other eye when a new batch of yeast rose too rapidly and knocked it out—"just at that moment my little sister, who was then an innocent baby who hadn't harmed a soul but now sings over the radio, sat up in her cradle and began to croon, 'Yeast is yeast, and West is West, but I want the yeast that rises best.' Instantly I was struck by an idea and by my mother who chanced to enter at the moment and saw me pushing the bread down.

"'Mother,' I said, 'I cannot tell a lie—that yeast isn't worth two hoots in Harlem.' 'I know it isn't,' said my dear mother. 'Your father bought it.' But I knew the trouble lay deeper than that.

"'Mother,' I said, 'I shall invent a yeast that is more dynamic.' And with the word 'dynamic' I got the idea of dynamite. Why not try grafting the yeast plant with a dynamite plant? Why not, indeed?

"I hurried down to Washington and secured the services of a well known grafter—that was in the Fall—and by Spring the grafting was complete. This man's name was Heeney, so at first we

(Continued on next page)

called the culture Dough-heeney, which was changed later to Dough Dynamic Yeast, for political reasons.

"So you see," concluded Mr. Dough, calling his Public Relations Counsel to him to drive away the reporters, "that's how I became interested in things rising—and now everything is going up, from skirts to airplanes. In fact, the general rising tide in women's affairs is attributed directly to eating yeast. You recall the fur muffs ladies used to carry—? All made over into neck-pieces."

Mr. Dough nodded pleasantly and handed this correspondent a copy of the Derby Rules, wrapped around a cake of yeast.

"Eat the yeast and throw away the wrapper," he advised. "The rules don't matter, anyhow. The only one we absolutely insist on is that all planes be at the starting-line in sufficient time for the news photographers and movie men to secure pictures of the contestants, so that we will have something to remember them by. What a noise those movie men are making, aren't they? Dear fellows!"

Mr. Dough smiled benignly and posed for his picture. The movie machines whirled and stuttered and shivered as they grabbed his likeness. You could hear them above the roars of the motors and the glider salesmen, whose toy gliders scooted around the field, knocking off hats and stunning people. This correspondent pushed his way behind a hangar and sat down among a collection of crashed airplane fragments to study the rules.

Rule 1 reads: "All types of vehicles are eligible. Size—immaterial. Length—anything you like. Speed—not slower than that of a standard Martin bomber. (This lets anything in, of course.) Engine displacement—you can displace the whole engine if you like. Load—pilots may fly empty or full."

All of which is fair enough. The idea is to get as many in as possible, so they will look good in the pictures. It continues:

"Qualifications—every vehicle entered must be of a type that puzzles the Department of Commerce. This is part of the fun—to make the Department guess whether the plane should be in or out. And to make it more interesting, no home-made plane should carry a set of drawings or a stress analysis, so as to save weight. The inspector is supposed to guess all that. If he guesses 'no' and says that a plane shouldn't go, it gives us a chance to get in the papers by panning the government.

"Every vehicle entered absolutely must be an experimental design—preferably one that has never been flown, even to the field. The proper way to bring a plane to the field is by box-car and truck. It should be erected, under the eye of the camera, and various parts should be cut and changed so as to stimulate public interest. There is nothing more thrilling to the general public than to see a plane changing before their eyes—they see it start out to be a biplane and see it change into a monoplane or an aerial error. If it gets erected in time, it is well to taxi it furiously about the field, until it rips off a tail-skid. If it doesn't do that, it should be flown on test hops until something breaks, or—better still—until the whole affair is wrecked. Remember, this Derby is to stimulate interest in aviation; and the more stimulating we can make it, the better. The public are not interested in tried and true commercial planes—they're dull things. They never get in the papers.

"If a plane is flown to the field, a crew of mechanics should be working on it en route. Even if it is complete, let them work anyhow. Even if they merely take off a rudder and put it back on again, let them do it. And tell the reporters about it. Better still, take the motor apart, without asking Mr. Mulligan anything about it, and inform

the reporters that you were 'tuning up the motor.' When it is really in tune, change the plugs and start all over again. It has been suggested that a crew should disassemble a plane in the air and come down by parachute. But this seems a needless waste of labor. Merely fly the thing until it disassembles itself."

That, briefly, sums up the qualifications. We searched for Rule 2, but could not find it. The rest of the booklet was devoted to a dissertation on the benefits of eating, inhaling, or gargling yeast, with diagrams and letters of recommendation.

There was a page devoted to various illnesses that had been alleviated by Mr. Dough's yeast, including Sleeping Sickness (See National Aeronautic Association Report No. 43.) For dropsy it advised, "Consult Irvin Air Chute Co. for specifications Standard Army Pack."

Among the entries of outstanding interest is *The Spirit of New York*, known more familiarly to its crew as *Synthetic Gin*. It is a cantleaver monoplane designed by Texas Guinan and piloted by Casey Jones, Mr. Will Rogers' chauffeur. Restaurant service and jazz band supplied by Roger Wolf Kahn, by special permission of Otto Kahn, with apologies to the Metropolitan Opera Co. and Gatti Cazzaza.

The Pride of Broadway is a buyplane, carrying as an emblem in Bass-relief, the life-like representation of a lobster pursued by a Follies girl, and the motto, "Glorifying the American Lobster," done in maraschino cherries. Although the crew of this plane has not been decided upon, it is rumored that it will be piloted by Dr. Nicholas Murray Butler, president of a rolling-mill; and that Mayor Walker of New York will accompany him as wing-walker if he can get up in time. All of the night clubs are to be closed the night before the race, which strengthens the rumor that Jimmy will be on hand to go. They'll probably start late, in pajamas.

The Flying Bullet, Chicago's entry, will carry as a passenger Charles Dickinson, Chicago's perpetual passenger. No airplane has ever left Chicago without Mr. Dickinson aboard. He's become something of an institution by now. His facial and hirsute resemblance to the late Brigham Young and Oom Paul Kruger is one of the outstanding delights of aviation, and his flouting of the advice given to men by the Messrs. Gillette, Mennen, and Colgate, marks him as a man of independent thought. Early in youth Mr. Dickinson read, "Keep that school-girl complexion." So he covered it up at once, and it's never been seen since.

Big Bill Thompson, Mayor of Chicago, will accompany the racers to see that King George keeps his hands off the moon as well as off Chicago. "The sovereignty of Chicago must be maintained," said Mr. Thompson. "I'll see to it that King George keeps his snout out of the moon's affairs, if I have to shoot personally every school superintendent up there." All three of the crew are wearing bullet-proof flying suits and are heavily armed.

The Spirit of Corn, entered by Elliott White Springs of Fort Mill, South Carolina, will be piloted by Mr. Springs alone, with only sufficient rations to last him a week. Four gallons of rations are now being distilled for him by an expert ration manufacturer in the South Carolina Hills. Mr. Springs is the pilot who was mentioned so frequently and so favorably in "War Birds." His stirring call, "Give me Liberty or give me McClure's Magazine," has become a buyword in American literature. "If I can land safely on that field of mine at Fort Mill," declared Mr. Springs hopefully, "I ought to be able to land on the moon."

The dark horse in the race is the U. S. Navy entry, *The Mud-hook*, a cast-iron helicopter developed to move high-ranking naval officers.

(Continued on page 759)



Goebel *flew the Pacific with* **SILVERTOWNS!**



When Art Goebel equipped "Woolaroc" for the Dole-Pacific race to Honolulu, he knew that the hop-off, with the plane carrying every possible pound of fuel and oil, would be one of the most important periods of the entire flight.

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FLYING IN WINTER

By
Edward A. Stinson



EVEN while I was busy training pilots at San Antonio for Army service, the idea was on my mind that the practical commercial airplane would have to be one that would combine two specific properties: first, it should be inherently stable, and second, it should be vastly more comfortable for passengers and pilot than the open cockpit type of that time. I felt that not only was such a plane possible, but that really practical commercial flying would never come into its own until such a plane was produced which could be flown even in winter. Other vehicles were designed to afford protection from the elements and their comfort and safety had been developed so that people liked to ride in them—why not the airplane?

Several Detroit gentlemen felt the same way about it. We built our first experimental biplane in the latter part of 1925, with a fully enclosed cabin, brakes on the wheels, and so inherently stable that it would really fly itself. It was the first airplane that ever combined these features and the Stinson-Detroiter of to-day is the same plane that has created new standards in the modern plane for everyday practical flying purposes in all parts of the country.

Our first production plane was completed in the fall of 1926 and it is in active daily service to-day. Stinson planes now in use by business organizations for the purely business purposes of carrying busy executives about, by commercial airlines on regular schedules, and, by all those who want to go quickly, comfortably and safely from place to place, are the most satisfactory testimonials of



the soundness of principle on which the Stinson plane was conceived. It seems to me that the real future of flying still depends on just that principle; it should be the basis of all development.

From actual experience over many years I know that flying in an enclosed cabin plane is really more enjoyable than in a closed automobile. Heaters, operating from the exhaust manifold, afford an abundance of warm, fresh air. There's not the stuffy, dusty atmosphere one often suffers in the automobile. Radiators in the airplane cabin floor distribute the heat as desired by the passenger.

The days of heavy fur flying togs and other Eskimo-like preparations by commercial air travelers are no more. One steps into the cabin in ordinary street clothing often without even a hat or overcoat. Recently on a trip up into the northern part of Michigan with the thermometer down to 8 degrees above zero we sat comfortably within our cabin in ordinary clothing, overcoats off, and enjoyed the beauty of the winter landscape as no other view could possibly reveal it, while those who met us at the landing field in heated limousines told of the freezing atmosphere on the ground.

Few people realize that landing fields automatically spring up overnight as the frost hardens the ground and ordinary cultivated fields, too soft for safety in warmer seasons, become airports, because one can land readily on frozen surfaces. Lakes and many rivers frozen in winter often become ideal landing fields.

When trains, trolleys and automobiles are delayed, often stopped entirely by the rigors of winter, by snow and sleet and drifted highways, the airplane is daily proving its reliability, its comfort and its safety.

Truly—winter is the ideal time to fly.



Eddie Stinson flying his cabin monoplane, the "Veedol."

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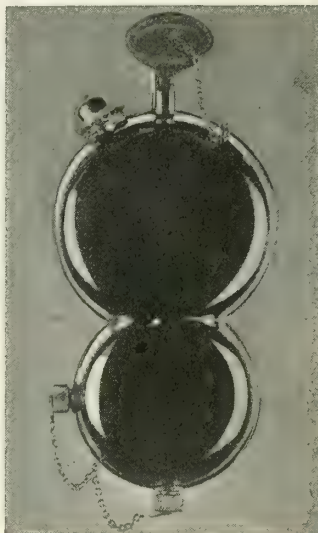
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Ernest Smith and Emory B. Bronte...Oakland to Honolulu Flight... <i>"City of Oakland"</i>	Ruth Elder and Captain George Haldeman...New York to Paris Flight... <i>"American Girl"</i>
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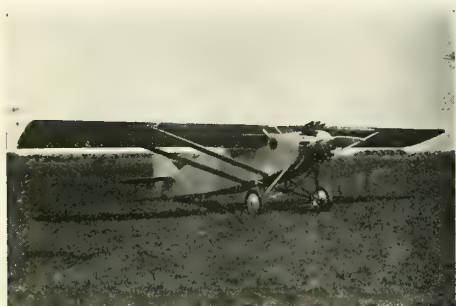
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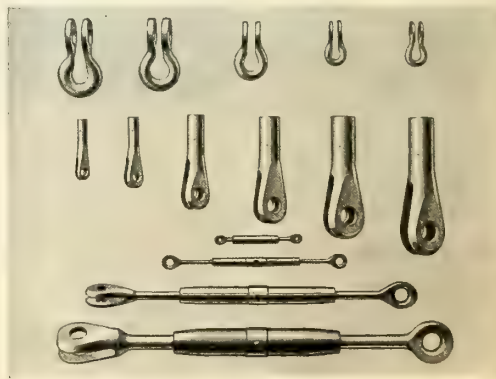
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ACHIEVEMENT" has been written large in American Aeronautical History during the year that is just ending.

The achievements of men—of planes—of engines.

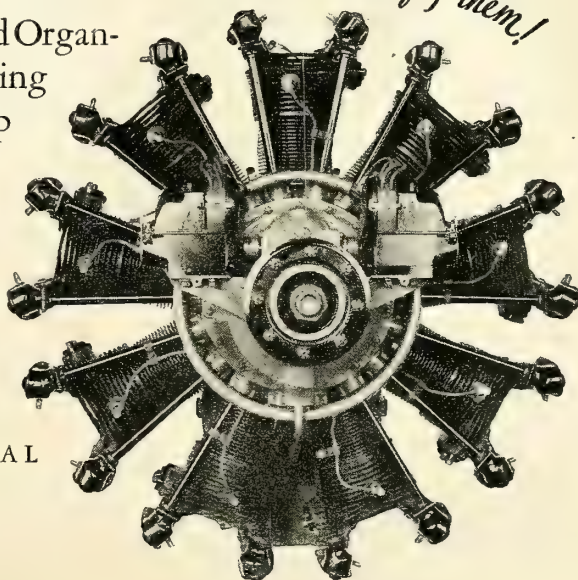
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INTERFERENTIAL RESISTANCE

IN an endeavor to increase the general efficiency of the Stinson monoplane, particularly the top speed, the following test was carried on and the analysis made. It is in line with our general policy of aiding the industry as a whole that the following wind tunnel test is published.

Referring to elementary aerodynamics we may find the resistance of several of the component parts of an airplane. By itemizing these we may visualize where the power of the engine goes to:

$$W = L = C_L \rho S = C_L (\frac{1}{2}) \rho V^2 S$$

Assume 125 miles per hour and $W = 3500$

$$3500 = C_L \times .001185 \times 183^2 \times 294$$

$$C_L = \frac{3500}{.001185 \times 33500 \times 294} = \frac{3500}{11690} = 0.300$$

$$C_D \text{ (corresponding to this value of } C_L) = .014$$

$$D = (\frac{1}{2}) \rho V^2 C_D S = .001185 \times 33500 \times .014 \times 294 = 164 \text{ pounds.}$$

Assuming a propeller efficiency of 80 per cent at this speed, there is available $\frac{220 \times 550 \times .80}{183}$ or 528 pounds of thrust.

In other words the force required to drive the elemental wing through the air at 125 miles per hour at sufficient angle of attack to maintain constant altitude is only 30 per cent of that required to propel the entire plane. These figures are based on an exceedingly efficient wing and perhaps a high propeller efficiency. They only go to show however that too much attention is generally given to the airfoil section itself and not enough to the other necessary parts which make up the finished product.

The interference between component parts and the fuselage proper is responsible for the remaining 61 h.p. or 35 per cent of the total. This is of course an old story but it is deemed a good policy to bring it up as a reminder that the chance for improvement lies not in developing new wing sections so much as acquiring more knowledge of interference forces.

It was with this idea in mind that wind tunnel model tests were carried on to determine comparative resistance and lift coefficients for various fuselage shapes. Two tests are cited to show the gains that may be realized. Only comparative results are of value since the wind tunnel used was only the standard atmosphere type and the model was at best but a crude one.

The first test was to determine if the extra lift to be gained by merely placing a continuous wing on top of the fuselage was worth while. The drag in this case was 162 gms., while the lift was .635 pounds. Short wing stubs with end plates were used, which accounts for the small ratio of lift to drag. By fairing the upper side of the fuselage as is the present Stinson monoplane, it was found that the lift was reduced to .42 pounds and the drag to 140 gms. Since it is only the difference we are interested

By **W. C. Naylor**
Chief Engineer, Stinson Aircraft Corporation

in, we may step these up to full scale so we are able to more clearly visualize the difference:

$$L = (.635 - .42) \times \frac{1}{(\frac{1}{8})^2} \times \frac{\text{speed of airplane}^2}{\text{speed of model}^2} = \frac{.215}{1/64}$$

$$\times \frac{125^2}{40^2} = 134 \text{ pounds loss of lift.}$$

$$D = .0484 \times 624.64 = 30.2 \text{ pounds loss of drag.}$$

It may be interesting at this point to check the L/D of this portion in the slipstream, which is:

$$\frac{134}{30.2} = 4.44.$$

Thus it can be stated that approximately a 10 per cent increase in efficiency of the wing section results in only 3 per cent of efficiency of the finished airplane.

By devoting more time and energy to the general lines of the fuselage and surrounding parts a more material gain may be expected. By resolving the total resistance up into its component parts a much clearer idea is obtained. Since the resistance coefficient of the fuselage is difficult to obtain we may by a process of elimination arrive at its approximate value.

The following list gives the power required to propel the isolated parts at a speed of 125 m.p.h.:

Wing	68 H.P.
Landing gear (wheels only, 16 h.p.) total....	21 H.P.
Lift struts (4)	9 H.P.
Tail surfaces	18 H.P.

Total (except fuselage and interferences) 116 H.P.

It is therefore obvious that any increase in lift by this means is a poor investment. The loss of lift may be regained either by adding wing area at the wing tip or, if the lift is deemed sufficient, it may be dropped entirely and the net saving turned into an increase in top speed. In the former case, it was found that 14 additional square feet would make up the difference. The power required to drive this area at 125 m.p.h. is

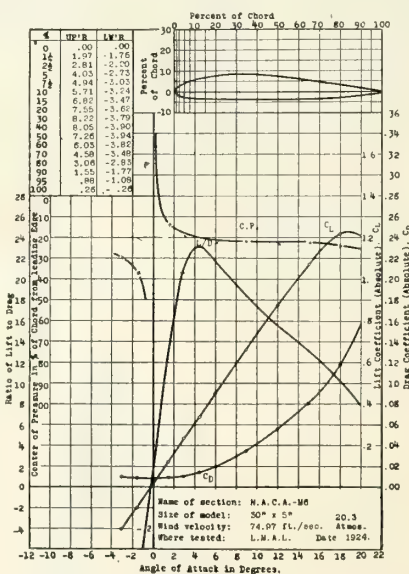
$$\text{H.P.} = \frac{6.68 \times 125}{375} = 2.225 \text{ H.P.}$$

while the power absorbed in the former case is:

$$30.2 \times \frac{125}{375} = 10.10 \text{ H.P.}$$

A net saving of 7.88 h.p. can be realized in one case and a saving of 10.10 h.p. in the other case.

This is purely a reduction in the interference coefficient of resistance. Since it is a simple matter to prove that the total resistance is far greater than the sum of the resistances of the component parts, it follows that tests of this nature would prove highly interesting and beneficial to those seeking improvements on existing designs.



Ordinates and characteristics of the M6 wing curve used in the Stinson monoplane

Used by Stinson Aircraft Corporation on body of "Pride of Detroit" for

- water-proofing
- air-proofing
- adhesive purposes

KAR-TITE

ASBESTOS BEDDING CEMENT
FOR AEROPLANE BODIES

Kar-Tite has all the good features of old fashioned putty with none of its faults. The principal advantage of this cement is that it remains elastic and does not get hard or brittle like putty or ordinary bedding materials. It will withstand the jar and vibration to which an aeroplane is constantly subjected, without impairment of its service—while putty or other glazings break down under the strain. Kar-Tite readily contracts and expands under varying temperature conditions.

The peculiar rubber-like consistency of this cement makes it exceptionally easy to handle. It can be pulled out in strands and readily rolled or moulded—works into shape much easier than putty.

The principle of applying bedding cement in strand form originated with us and has greatly helped to speed up production and make a neater operation. It has done away with the old fashioned putty knife and glazing gun—eliminating all smeary, mussy work.

Kar-Tite is a radical departure from other bedding materials, being made of an exceedingly long-fibre asbestos—in place of the heavy pigments commonly employed—and consequently possesses far superior binding qualities. It also has the additional advantage of being much lighter in weight per cubic foot as compared to the heavy, dense materials making up the body of other products.

REP-STIK

THE WATER-PROOF ADHESIVE
— *extraordinary*

For fastening leather, artificial leather, cloth, linoleum, fibre board and cardboard to all kinds of surfaces. Made in black and colorless types. Also in paste form with pigment base. Quick drying, economical and requires no heating.

CORRESPONDENCE INVITED

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PAINT AND VARNISH WORKS
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The "Pride of Detroit"

is one of the outstanding examples of the most modern type of aircraft. In its construction only up-to-date methods and approved materials were used.

Seamless Steel Tubing

supplied by our company was used in the steel tube construction throughout.

Mill and Warehouse Service
All Grades Tubing

SERVICE STEEL COMPANY
1435 Franklin Street, Detroit, Michigan

Macwhyte Tie Rods on Stinson Planes

The Stinson Aircraft Corporation equips its world-famous planes with Macwhyte Streamline and Round Tie Rods—designed to increase flying efficiency to the maximum. Ask Stinson about these tie rods—and write to us for the complete tie rod catalog. Macwhyte Company, 2907 Fourteenth Ave., Kenosha, Wisconsin.

MACWHYTE
Streamline and Round
TIE RODS

BLAKELY SIGNS

LETTERS for the STINSON - DETROITER

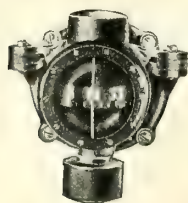
FOR something over ten years we have been painting signs around Detroit, and our activities extend to every form of displayed lettering and design.

Our work is known throughout Detroit, in the home counties and beyond.

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WOODWARD AVE.

Phone
Randolph
6610

We Use the Albert Kahn Style of Design Exclusively



Star Compass

The
"PRIDE
of DETROIT"
and all Stinson planes
are equipped with
JONES TACHOMETERS
— a Consolidated Product



Jones Tachometer



Air Speed Indicator



Tag Altimeter



Oil Gauge



Consolidated Instrument Company
OF AMERICA, INC.

41 EAST 42ND STREET, NEW YORK



On the long flight of the "Pride of Detroit" the reliable Wright J-5 engine was equipped with—

SCINTILLA AIRCRAFT MAGNETOS

SCINTILLA MAGNETO CO., INC., SIDNEY, N. Y.

Contractors to the U. S. Army and Navy

The Pride of Detroit

was equipped with Pioneer Instruments including —

Earth Inductor Compass
Bank and Turn Indicator
Rate-of-Climb Indicator
Altimeter
Air Speed Indicator
Speed and Drift Indicator
Magnetic Compass
Tachometer
Oil Pressure Gauge
Motometer

Brock and Schlee state that our instruments performed perfectly all the way from New York to Tokio. When our engineers checked this equipment after the return flight to New York, everything was O. K.

For 100% dependability, equip with Pioneer Instruments.

Descriptive folders upon request

PIONEER INSTRUMENT COMPANY
754 LEXINGTON AVE. BROOKLYN NEW YORK

Modern Manufacturing Methods

are used by the leaders in the American aircraft industry. One of the practices of efficient producing organizations is the purchase of *finished* spars, ribstock and strips, kiln dried according to Government specifications. We work them out and deliver in sizes convenient for aircraft manufacturers.

Purchasing of lumber in the rough by aircraft manufacturers has been found to be inefficient and wasteful.

The Stinson Aircraft Corporation,
we are pleased to say are users
of our *finished* wood products.

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Now carried in stock for immediate delivery.

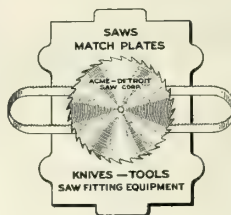
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Supply Company**
Dayton, Ohio

SPINNINGS for STINSON

**[We supply metal spinnings of
all types for airplane work.]**

**NOSE SPINNERS
WHEEL DISCS**

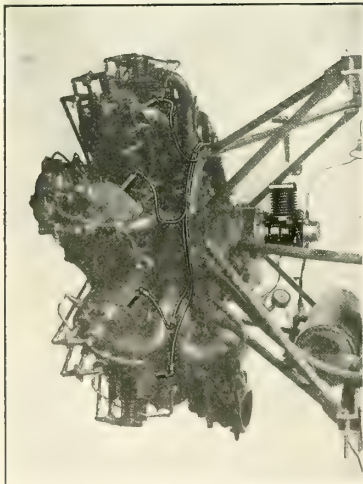
Auto City Metal Spinning & Manufacturing Co.
6465 Waterloo Street Detroit, Michigan



**Acme-Detroit Band
and
Circular Saws**
are used in the construction of
Stinson Planes

Aircraft manufacturers with production problems to solve will be interested in Acme-Detroit saws. Saws designed to cut all kinds of material, wood, metal and fabric. All Acme-Detroit saws cut costs.

ACME-DETROIT SAW CORPORATION
528 EAST FORT STREET DETROIT, MICHIGAN



Showing installation of the Heywood High Pressure Injection Starter on Wright Whirlwind Motor

Stinson Ships Equip with Heywood Starter

The first monoplane produced by the Stinson Aircraft Corporation using a Wright J-4 engine, was equipped with a Heywood starter. The Stinson plane winning the 1927 National Air Tour also used the Heywood starter. High efficiency, light weight, positive starting in zero weather and producing initial starting speed of 200 to 650 R.P.M. are the unfailing qualities which have earned universal recognition for the Heywood High Pressure Injection starter.

Write for complete descriptive matter and engineering data

DETROIT AIR APPLIANCE CORPORATION

Manufacturers of

HEYWOOD HIGH PRESSURE INJECTION STARTER

6547 St. Paul Avenue

Detroit, Michigan



"PRIDE OF DETROIT"

Many planes being produced by Stinson Aircraft Corporation are finished with Ti-Two Dope.

Leading manufacturers of commercial aircraft use TITANINE dopes, pigmented dopes, varnishes and enamels on production planes because of their proven protection and beautiful appearance-features which promote sales.

TITANINE, INC.

UNION, UNION COUNTY, NEW JERSEY
Contractors to the United States Government

TI-TWO DOPE

IS NOW AVAILABLE
IN GLOSSY OR
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HEAT TREATING

The axles, landing gears and tail skid assemblies used on Stinson planes, made from Chrome Molybdenum steel tubing, are heat treated to a tensile strength of 150,000 to 180,000 lbs. per square inch by our organization.

We also heat treat the motor mounting assembly. The tail skid shoes are carburized and hardened.

We are equipped to heat treat any airplane or motor parts in any quantities.

Our twenty years' experience in automotive metallurgy is available to you for consultation in selecting material and heat treat specification for your product.

WRITE FOR PARTICULARS

COMMONWEALTH HEAT TREATING CO.

5922 Commonwealth Avenue

Detroit, Mich.

THE SUPER FYR-FYTER

(APPROVED)

THE "SUPER" FYR-FYTER IS THE IDEAL EXTINGUISHER FOR AIRCRAFT USE.

It is the only 1 qt. extinguisher that can be operated with one hand.

The Stinson Aircraft Corp. has standardized on Fyr-Fyters.

THE FYR-FYTER CO.
Dayton, Ohio



INTERNAL TIE RODS

braced the wing-span of the Stinson monoplane "Pride of Detroit" in its record-breaking 12,295 mile flight from America eastward to Japan.

They withstood the terrific strains of the flight and helped inspire the confidence which made Brock and Schlee successful.

Write for Circular A

STEWART HARTSHORN CO., 250 FIFTH AVE., NEW YORK
Established 1860



The Stinson factory, Northville, Michigan, showing several of the departments

THE drafting and engineering department where the designs are drawn and calculated is shown in the top view. Below it is the wing covering and doping department; the men are seen applying the rib tapes on a newly covered panel. Under this view is an interior of the cabin of the Stinson plane, looking toward the rear, showing the wide windows and comfortable seating arrangement. At the bottom is the fuselage assembling and welding department.

AT the top (right) the welders are shown assembling the tubular steel members of the wings and tail surfaces. Below it is the wing painting department showing how the protective coating of paint is applied by means of air pressure spraying guns to speed up the work and spread the coatings evenly. Under this is the engine installation department where the Whirlwind engines are fitted. At the bottom is the wing panel assembly department.

The "Pride of Detroit"

is an outstanding example of
advanced technique in
Aircraft Construction

ALUMINUM SHEETS supplied by our company to the Stinson Aircraft Corporation are the product of advanced technique in aluminum engineering

THERE are many purposes for which pure Aluminum Sheet is not suited — either because greater strength is required, or greater ductility, or greater resistance to atmospheric conditions and corrosion, or greater brilliance, or because special conditions of various kinds enter into the problem.

The Fairmont Manufacturing Company manufactures many Aluminum Alloy Sheets to meet any number of different conditions. Some of these alloys have great strength — far greater than ordinary pure aluminum — others have greater elongation — others are highly resistant to corrosion — some take and retain a much higher degree of polish than ordinary Aluminum Sheets.

If you will write us fully of your problems, preferably sending us a sample of the articles you are making, or want to

make of Aluminum or Aluminum Alloys, going into detail as to the conditions you have to meet, we will render you a real engineering service, place our chemical and physical laboratory at your service, and give you the benefit of our knowledge and experience, and suggest the proper kind of Aluminum Sheet to meet the given conditions.

Our Research Laboratories are in charge of Dr. Robert J. Anderson, who has made a life study of Aluminum problems, and is an expert of national reputation. Dr. Anderson is assisted by a corps of skilled metallurgists and engineers.

We manufacture Aluminum Sheets, Coils, Circles, pure and alloys, for all purposes.

We shall be glad to answer questions, make quotations and otherwise serve you.

FAIRMONT MANUFACTURING COMPANY

General Sales Offices—FAIRMONT, WEST VIRGINIA
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General Motors Bldg., DETROIT
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310 Union Mortgage Bldg., CLEVELAND

OAKLAND MUNICIPAL AIRPORT

By

G. B. HEGARDT

Port Manager and Chief Engineer

THE Municipal Airport at Oakland, California, has now become well known in connection with the Hawaiian Islands flights by Lieutenants Maitland and Hegenberger, Smith and Bronte and later by all the contestants in the Dole-Hawaiian Derby.

Our airport has been visited by the Assistant Secretaries of War and Navy, General Patrick, General Gilmore and other high officials of the government, who have publicly stated that it is one of the best in this country, and this was confirmed by Colonel Lindbergh when he visited Oakland on September 17th.

The accompanying maps show the location of the airport with reference to San Francisco Bay. On this vicinity map of San Francisco Bay is also indicated the San Francisco Mills Field, Crissy Field, and Concord Field. On the vicinity map, showing highway connections to Oakland's Municipal Airport, the close proximity of the airport to the center of the City of Oakland may be noted; on a larger map, is shown the property acquired by the Board of Port Commissioners for an airport. The total area is 825 acres. This property is practically level and was acquired at a cost of \$766,887, paid in cash.

The larger scale plan of the airport shows an improved field, at this time having a length of 2,500 feet and a width of 1,700 feet in addition to the runway, which was

used by the Hawaiian flyers, 7,000 feet long. The extreme length north and south of the airport property is 8,336 feet and 7,200 feet east and west.

The control, construction and operation of the airport is under the jurisdiction of the Board of Port Commissioners of the Port of Oakland. It is the intention of the Board to level the entire area of 825 acres, for which purpose the Board will use its own dredge to make the necessary fill to grade.

Contracts have been let and under construction are the following facilities and improvements at the airport property:

Administration building, 60 feet by 42 feet.

Two steel hangars, each 90 feet wide by 200 feet long with machine shop space for each hangar of 20 feet by 64 feet.

In addition to the above, the Board has let contracts for the drainage of the improved field and runway, shown on the map.

Contract has also been let for a roadway in rear of the administration building and hangars to connect with the main roads or streets leading into the center of the City of Oakland.

Plans and specifications are now being prepared for the lighting of the airport, in accordance with plan approved by the Department of Commerce, Washington, D. C.

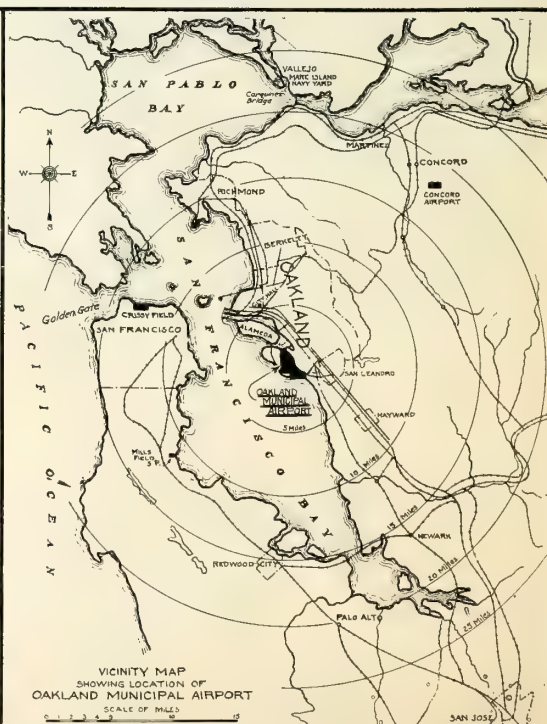
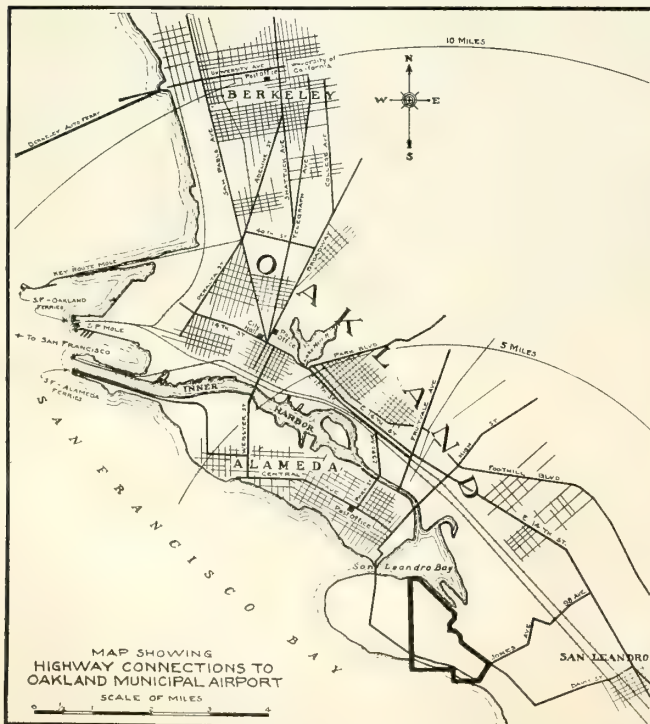
It is also the intention of the Board to immediately construct a restaurant building, install gasoline and oil facilities and such other

improvements that may be necessary to give our airport the highest rating of the Department of Commerce.

The Board has established flying rules and regulations, and also adopted charges for services rendered and use of our airport. Port Ordinance No. 13 adopting air traffic rules and regulations for the use and protection of Oakland's Municipal Airport and the navigation of aircraft in the vicinity thereto and Resolution No. 170, establishing charges for services and use of facilities at the airport are as follows:

Port Ordinance No. 13

It shall be unlawful for any airman, as defined by the Air Commerce Act of 1926 adopted by the Congress of the United States of America, or other person, to navigate any aircraft over the area of the Oakland Municipal Airport, or land any aircraft upon, or fly the same from such area otherwise than in conformity with the "Air Traffic Rules," effective March 22, 1927, as established by the United States Department of Commerce (Aeronautics Branch) under the authority of the said Air Commerce Act. For the purposes of this ordinance said Air Traffic Rules, as published in Chapter 5 of the Air Commerce Regulations of the said Department of Commerce, are hereby adopted by reference and made a part hereof as fully as if the same, and each of them, were completely set forth herein.



Vicinity map and highway map of the Oakland Municipal Airport.



BEFORE & AFTER

Taking Off

Ask for folder
"We"



"Caterpillar" Tractors supply the power to build that airport... they level, grade, roll or haul the earth... And after a smooth, well-drained field is achieved, they help to keep it in top shape... Snow removal, new runways... "Caterpillars" build and maintain airports *better, quicker, cheaper.*

There is a "Caterpillar" Dealer near you.

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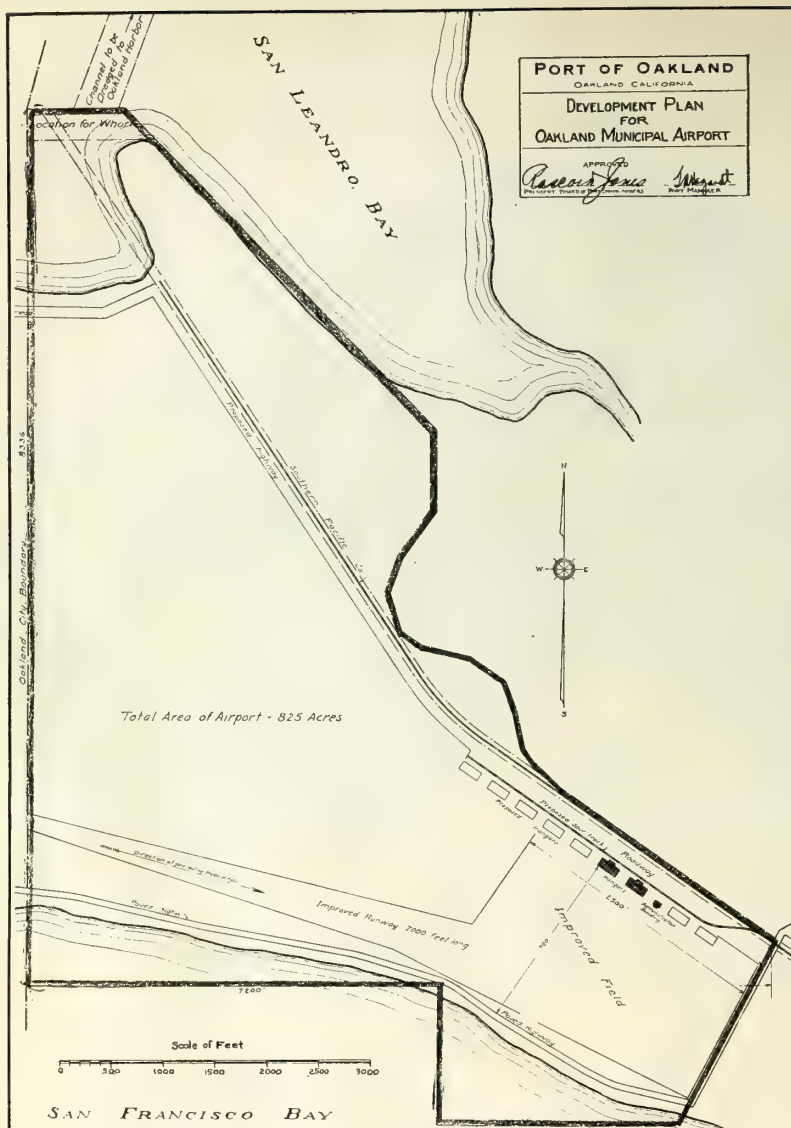
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Say you saw it in AERO DIGEST



Map showing the general layout of Oakland Municipal Airport.

It shall be unlawful for any airman, or other person, to navigate any aircraft over, land upon, or fly the same from the said area unless such airman, or other person, possesses a temporary letter of authority or a license issued by the Secretary of Commerce under the authority of the said Air Commerce Act.

It shall be unlawful for any airman, or other person, to fly or otherwise navigate over, land upon, or fly any aircraft from the said area except aircraft which has been registered and licensed by the Secretary of Commerce and rated as air worthiness, in accordance with the provisions of the said Air Commerce Act. Any unlicensed person landing aircraft upon the said area, or any person navigating an unlicensed aircraft thereupon, shall depart therefrom within twenty-four hours, provided, however, the Airport Field Superintendent may grant such person written permit to keep his aircraft on said area for a longer period provided such air-

craft is not navigated in the meanwhile. Having once departed, the return of any such aircraft to the airport shall be deemed a violation of the ordinance.

Wrecked aircraft and the parts thereof must be promptly removed from the landing field.

All persons working upon or handling aircraft on the area shall exercise reasonable caution to guard against fire. No rubbish shall be scattered about the said area.

No person shall engage in smoking, or strike any match inside of or within fifty feet of any aircraft, or within fifty feet of any containers of aviation gasoline or other highly combustible liquids, or within any hangars or work shops located upon said area.

The area of the Oakland Municipal Airport is hereby defined to be all that certain area of the City of Oakland located within the Port Area, as described by Section 230 of the City Charter of the said City, extending over Bay Farm Island and lying

south of San Leandro Bay and San Leandro Creek or Slough.

All officers and members of the United States Army and Navy while actively engaged in the service of the United States, and all aircraft owned by and operated exclusively under the direction and authority of the Army or Navy, shall be subject to the provisions contained in this ordinance except as to the licensing of aircraft and airmen.

Every person or persons, firm, company or corporation, who shall violate, disobey or refuse to comply with any of the provisions of this ordinance, or any of the provisions incorporated therein, shall, upon conviction, be punishable by fine and penalty, not exceeding Five Hundred Dollars (\$500.00), or by imprisonment in the prison of the City of Oakland for not more than six (6) months, or by both such fine and imprisonment.

Resolution No. 170

The following temporary charges, tolls and rates for services rendered by the Port Department at the Oakland Municipal Airport and for the use of the airport terminal facilities are hereby adopted:

Landing fee, including storage of plane on ground for one day or fraction thereof\$1.00

Storage fees per plane per day or fraction thereof including landing privileges:

Hangar space 2.00

Ground space 1.00

Monthly storage fees per plane including landing privileges:

Hangar space 40.00

Ground space 20.00

Passenger toll, for each passenger carried for hire, except planes in transit. .50

Mechanic services:

For straight time per hour (8:00

A. M. to 4:30 P. M.)..... 1.50

For overtime per hour..... 2.00

All planes must be registered at the office of the Airport Superintendent. All commercial and other planes in transit not attached to the airport or operating therefrom must be registered immediately upon arriving and be checked out upon departure.

All operators of planes must at the time of registration declare the length of time and the purpose for which such plane will be kept at the airport.

Landing fees must be paid at time of registering. Storage fees must be paid strictly in advance. Tolls for passengers must be paid at the close of each day by the operators of such passenger carrying planes. Mechanician services must be paid for upon the completion of the work. All fees for planes in transit must be paid in cash.

No landing fee shall be collected from planes engaged in the service of the United States Army, Navy or the Marine Corps, or the United States Department of Commerce, or from planes carrying the United States mail.

All charges, rates and tolls herein provided for shall be collected by the Airport Superintendent, paid into the City Treasury, and accounted for to the City Auditor in the manner prescribed by the City Charter for the collection of other harbor terminal charges.

Made entirely of steel

—and FIRE-RESISTANT!



Butler Ready-Made Steel Hangars can be had in sizes for an individual plane or many planes. This hangar was put up quickly.

The advantages of Butler Ready-Made Steel Hangars are many and simply stated:

Non-combustible—Butler Hangars are made entirely of steel. Doors, sash, roof, and walls are steel. The wall and roof sheets are 24-gage tight coated galvanized steel with deeply paneled corrugations. That's why Butler Hangars are fire resistant, non-combustible.

Rigid construction—All sheets are bolted together and to the steel frame by means of galvanized bolts. This bolted construction makes a more rigid and satisfactory building than other types of construction. It makes the building permanent as long as desired, yet allows practically 100 per cent salvage.

Good lighting—Arrangement is made so that

plenty of light is secured within the Butler Hangars. When working on machines this is very desirable. Any kind of convenient electrical lighting arrangement can also be installed in the Butler Hangars.

Doors easily opened—Special attention is called to Butler doors. They are mounted in convenient sized sections on large flanged wheels. These wheels are equipped with Hyatt Roller Bearings. The wheels roll on steel rails. That's why the Butler doors operate so easily.

Other advantages—Butler Ready-Made Steel Hangars come complete, ready to erect. They may be economically enlarged at any time. If desired they may be taken down, moved and re-erected with practically 100 per cent salvage.

Prices are made F. O. B. plant or erected. Send for interesting prices and complete details.



Butler Manufacturing Company
 Kansas City, Mo. Minneapolis, Minn.

New York Office: Room 701, 44 Whitehall St.

Say you saw it in AERO DIGEST

PROGRESS OF DISTANCE FLIGHTS

ENGLAND-INDIA

THE two British airmen, Captain R. H. McIntosh and Bert Hinkler, took off from Upavon Airdrome, Wiltshire, on November 15 in an attempt to achieve the first non-stop flight to India and break the world's distance record.

They flew in the monoplane *Princess Xenia* the same plane in which McIntosh made an unsuccessful effort to fly across the Atlantic to the United States early this fall.

No word was heard from the two airmen for two days when it was learned that they were forced to land in Poland on November 7 after a non-stop flight of 2800 miles. For twenty-four hours they flew in a continuous fog and snow with such terrific bumps that the plane would fall thousands of feet. The airmen believe that they reached Bessarabia, Roumania, before they turned back and landed ten miles inside Polish territory.

The next day they set off again for Warsaw but bad weather and poor visibility forced them to land at Lemberg when they partly wrecked their plane in landing and were obliged to give up their flight.

UNITED STATES-NEW ZEALAND

CAPTAIN FREDERICK A. GILES, British flier, took off on November 10 on his flight from Mills Field, San Francisco for Honolulu on the first leg of his 12,000-mile to New Zealand. Heavy fog forced him to return to Mills Field forty-five minutes after the start. He could not lift his Hess Bluebird biplane *Wanda*, weighing 5100-pounds, above 225 feet so had to dump 284 gallons of gasoline and return.

Another attempt was made by Giles on November 22, but he was forced to turn back after traveling 500 miles to sea. He landed near San Simeon, Calif., and reported encountering a severe storm that sent his biplane into a tailspin and almost cost him his life.

He will make another attempt when the weather is more favorable. His financial backer is W. H. Rosewarne of Detroit.

ENGLAND-AFRICA

SIR ALAN COBHAM left Rochester on November 17 in his Short all-metal fly-

ing boat *Singapore* on the first lap of his 20,000-mile flight around Africa. He was accompanied by his wife; Captain H. V. Worrall, second pilot; F. Green and C. E. Conway, engineers; and S. R. Bonnett, photographer.

Two hours after leaving Rochester he alighted at Hamble River, near Southampton, the first stop on his schedule. From there he flew to Bordeaux and then to Ajaccio, Corsica; from there he will proceed to Malta, Cairo, Kisumu, Victoria, Tanganyika, Nyassa, Beira, Durban, Cape Town; then up the western coast of Africa to Gibraltar and home, calling at all British possessions en route.

The objects of the flight are to survey certain sections of the route through Africa and to investigate flying conditions and commercial possibilities of airlines.

JOHN CARBERY, who was Lord Carbery but renounced his title and is in the process of becoming an American citizen, took off from Croyden, London, on November 18th with his mechanic in a Fokker monoplane, for Kenya, East Africa, via Capetown. The plane is powered with a Wright Whirlwind engine.

After a brief stop at Le Bourget, Paris, Carbery went on to Tourners, France, where he spent the night. On November 21 he arrived at Pisa, Italy and the next day flew to Rome.

ENGLAND-AUSTRALIA

CAPTAIN W. N. LANCASTER and his passenger, Mrs. Keith Miller, in their Avro Avian, *Red Rose*, powered with 30-80 h.p. A.D.C. Cirrus II engine, left Croyden, London on October 14 for Australia. On October 17 they reached Marseilles; October 21, Catania; October 22, Malta; October 26, Benghazi; October 28, Alexandria; and October 29, Heliopolis, Cairo. On November 3, the *Red Rose* arrived at Bagdad, after a four days flight from Cairo, during which they were forced to land in the desert at Rutba. On November 10 they reached Basra, near the head of the Persian Gulf.

GERMANY-UNITED STATES

THE Junkers D-1230, after several unsuccessful attempts to hop off from Horta, Island of Fayal, Azores, for Harbor Grace, N. F., tried again on November 24 but returned to the harbor under tow, with a propeller blade bent, unable to lift the plane from the rough sea.

On November 26, they again attempted the transatlantic hop but were unsuccessful in taking off.

Johann Risticz, who with Cornelius Edzard broke the world's endurance record in a Junkers W-33 last August, and Alexander von Benthheim have replaced Ralph Starke and Karl Loebe, as radio operator and mechanic.

Those who manned the plane on its recent attempts were Captain Frederick Loose, Second Mate Johann Risticz, Wireless Operator Wilhelm Niemann, Navigator Alexander von Benthheim and Mechanic Joseph Flittner. Lilli Dellenz, Viennese actress, is a passenger on the flight which started from Norderney, Germany, on October 5th.

THE Heinkel D-1220 was wrecked shortly after taking off from Horta on November 13, with Harbor Grace, N. F., as its objective. The crew was rescued uninjured. The Heinkel seaplane left Warnemünde, Germany, for the United States via the Azores on October 12. Horst Merz was the pilot; Wilhelm Bock, radio operator; and Fritz Rhode, mechanic.

UNITED STATES-AUSTRALIA

CAPTAIN CHARLES E. KINGSFORD-SMITH and his crew—Keith V. Anderson, assistant pilot, Charles T. P. Ulm, navigator, and William A. Todd, navigator—are anticipating taking off from Oakland Airport during the first part of December for Australia. They plan to make the transpacific flight in four hops, from Oakland to Honolulu, to the Fiji Islands, to Brisbane, and thence to Sydney, a distance of about 9,000 miles. Lieut. George H. Pond, U. S. N., George Hedding, mechanic, and Phillip Salzman, engineer, are assisting in the preparations.

The flight is being backed by the government of New South Wales and commercial aviation interests in the United States and also has the support of the U. S. Post Office Department. Second Assistant Postmaster General W. Irving Glover has announced that 1,500 letters will be carried.

"Letters intended for this flight, if sent under separate wrapper by air mail to the postmaster at San Francisco, up to the capacity mentioned, will be forwarded on this flight," said Mr. Glover.

"The postage rate between the United States and Australia is 5 cents for the first ounce and 3 cents for each additional ounce. The letters should be as light as possible."

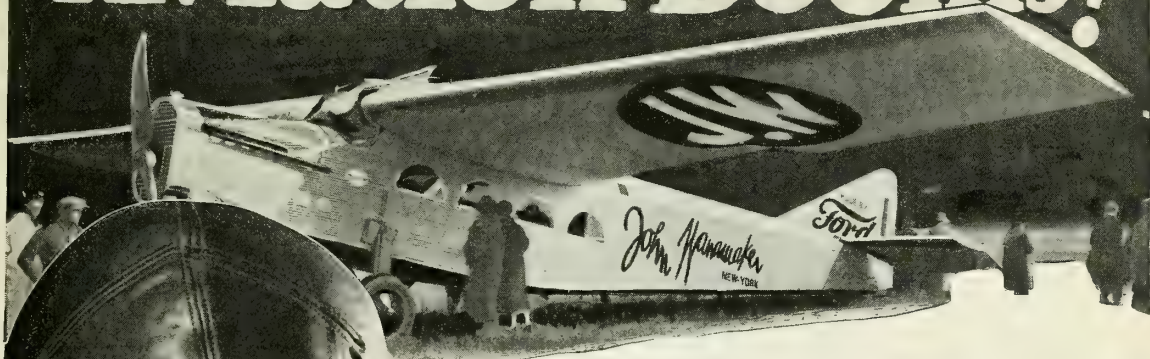
Among the letters that will be sent on this flight will be one from President Coolidge to Prime Minister Bruce of Australia. Postmaster General New will also send a letter to Postmaster General Gibson of Australia.



P & A photo

Capt. Giles taking off on his attempted flight to New Zealand in the Hess Bluebird

Aviation Booms!



The skies are dotted with daring young men—from every country come stories of new feats—new victories—new heroes! The golden age of Aviation has just begun—the future is almost too stupendous to be imagined! And now Aviation, with all its Fascinating Adventure, calls for Red-blooded young men—and will pay them splendid salaries! Read how some of Aviation's Pioneers will help you to qualify to get into Aviation—then send today for your copy of our FREE Illustrated Booklet, listing and describing the opportunities that await you.

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ARE YOU a red-blooded, daring he-man? Are you eager for a life of constant thrills, constant excitement and fascinating events? Do you crave adventure, popularity, admiration, and the applause of great crowds? Then why not get into the Aviation Industry—the greatest adventure since time began—the greatest thrill ever offered to man?

Think what Aviation offers you. Thrills such as you never had before! The praise and plaudits of the multitude. And a chance to get in on the ground floor where rewards may be unlimited!

Aviation is growing so swiftly that one can hardly keep track of all the astonishing new developments. Air-mail routes have just been extended to form a vast aerial network over the entire U. S. Airlines and airplane factories are springing up all over the country. Men like Henry

Ford are investing millions in the future of commercial Aviation in America! The possibilities are so tremendous that they stagger imagination!

PICK YOUR JOB!

Flying
Airplane Instructor
Airplane Engineer
Airplane Repairman
Airplane Assembler
Airplane Mechanician
Airplane Inspector
Airplane Builder
Airplane Salesman
Exhibition Manager
Airplane Contractor
Airplane Motor Expert
Airplane Designer

Everything is set for one of the greatest booms in history. Big fortunes came out of the automobile industry and out of motion pictures. Big fortunes will also come out of Aviation! The development of Aviation as an industry is bringing with it a call for trained men. Those who qualify quickly should find themselves on the road to undreamed of money—success—popularity—and prominence!

Easy to Become an Aviation Expert

Get into this thrilling business at once while the field is new and uncrowded. Now—by a unique new plan—you can quickly secure the preliminary training necessary to get a start in the Aviation Industry, either flying or ground work, at home during your spare time. Experts will teach you the secrets—give you the inside facts that are essential to your success. And, the study of Aviation by our method is almost

as fascinating as the actual work itself. Every lesson is chock-full of interest—and so absorbing that you actually forget you are studying. But best of all are the ultimate rewards you are fitting yourself to gain!

Send for FREE Book

Send the coupon for our new, free booklet, *Opportunities in the Airplane Industry*. It is vitally interesting, reads like a romance and tells you things about this astonishing profession you probably never even dreamed of. You owe it to yourself at least to read it. We offer you a free copy now, no obligation. Mail the coupon for yours today.



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American School of Aviation,
Dept. 2779, 3601 Michigan Ave., Chicago, Ill.

Without any obligation please send me FREE booklet *Opportunities in the Airplane Industry*. Also information about your Course in Practical Aviation.

Name Age

Address

City State

"THE DRIFT INDICATOR"

By William A. Rogers

THE change in character of commercial flying from "joy-hopping" to flights with definite business objectives is shown by the strength of winter flying this year. In years past most of the operators did one of two things—went South or closed up the shop until Spring thaws. Numerous business organizations throughout the United States now rely on the quick transportation of merchandise or personnel offered by aircraft operators. They use these services all-year-round.

Well designed and well kept airports insure a growth of all-year-round business.

"AVIATION and Life Insurance" is the title of a very interesting paper by Dr. Lawrence G. Sykes, medical director of the General Life Insurance Company, and Dr. William B. Smith, assistant medical director of the same company. This paper was presented at the 38th annual meeting of the Association of Life Insurance Medical Directors held at the Hotel Biltmore, New York City, October 27th and 28th.

Aviation in the United States has not only made rapid progress industrially but has become a safe risk for life insurance companies covering policyholders to the extent of over \$73,000,000,000.

Fifty of the leading life insurance companies of the United States, whose policyholders are insured for that amount, today place no restriction against participation in aviation. Not only life insurance companies have liberalized their attitude toward air passengers but accident companies, within the past six months, have included clauses in their contracts covering loss by "any hazard of aviation." They state, however, that the responsibility is assumed "only when the insured is riding as a passenger in a licensed airplane operated by a licensed pilot, upon a regular passenger route between established airports."

Air mail records were reviewed in the paper showing that in 1919 there were three deaths to 300,000 miles of flying, whereas in 1926 fatalities decreased until there were only two deaths for each 2,250,000 miles flown.

In discussing the outline of airway development, it was estimated that the value of real estate and improvements at the 66 leading airports represented a total investment of nearly \$17,500,000. On September 1st, of this year, there were 24 mail airways in operation serving over 65,000,000 people. Further statistics quoted show that the number of passengers reported increased from 205,094 in 1925 to 380,201 in 1926. In addition there were 182,508 pounds of express matter carried by commercial aircraft operators. By the end of 1927 the paper estimated that 1,000 airports and intermediate fields would be in operation from coast to coast and from Canada to the Gulf of Mexico. There are at present 864 fields, including 207 municipal, 103 commercial and private airports, 124 Department of Commerce intermediate fields, 287 miscellaneous intermediate fields and 181 Army, Navy and National Guard fields.

MR. WALTER RAUTENSTRAUCH, president of Splittorf Bethlehem Electrical Company and Splittorf Radio Corporation, has gone to Europe to be absent from this country for a month, during which time he will deliver a series of lectures and study conditions abroad. Mr. Rautenstrauch was invited before various organizations to talk on industrial topics. The Splittorf head is regarded a leading authority on industrial engineering. Mr. Rautenstrauch will discuss with Splittorf representatives abroad the situations as to radio, automotive and aviation conditions, in all of which lines the company is vitally interested. Splittorf makes all-electric and battery-operated radio sets, radio speakers, automotive and aviation accessories, parts and tools, and specialties in electrical appliances.

AN airplane spruce storage shed, the temperature and humidity of which will be constantly regulated by automatic thermostatic control, is being built by Posey Manufacturing Company, Hoquiam, Washington, nationally known manufacturers of airplane spruce. The shed, which will have a floor space of 100,000 square feet, will be used for storing and preparing orders for shipment after the stock has been manufactured and cured. To facilitate production of this material a new Yates-American self-contained motorized cutoff is the newest of its type, equipped with ball bearings, and provides direct power to the saw arbor. H. O. Galloway, manager of the plant, spent September visiting the airplane manufacturers in the middle west and the east. T. B. Stinchfield is superintendent, William Yandle mill foreman, Walter Slade, kiln foreman, and Joe Brite, filer.

THE Consolidated Instrument Company, in its effort to keep ahead of current events, has just announced a complete line of navigating lights, landing lights, dashboard lights and switches for these accessories.

It has been rumored that this company will also offer an Airplane Taximeter to present and future operators of aerial taxi services.

The "Star" Pathfinder Magnetic Compass, another Consolidated instrument, can now be obtained in a flush mounting type and its appearance on the dashboard is similar to that of any other panel mounting instrument. Refinements of design are constantly being developed which bid fair to keep their line in constant demand. It has been stated that over 90 per cent of American Aircraft builders are using one or more Consolidated instruments.

WALTER C. CROWDUS, aviation insurance specialist, has moved his office to larger quarters at 202 South State Street, Chicago, Ill.

HOWARD C. WILCOX, who has operated an aeronautical supply business in Houston, Texas, since 1920, has just joined the Nicholas-Beazley Airplane Company of Marshall, Mo., according to a statement by Russell Nicholas, president.

Mr. Wilcox is well known to the aeronautical trade, having sold airplanes, engines and supplies to thousands of fliers throughout the United States.

During the war Wilcox was in the Air Service and for 14 months was instructor in aerial gunnery and bombing. After his discharge he was in charge of the Aero Repair Depot at Aberdeen Proving Ground, and immediately afterward was for one and one-half years foreman for the Curtiss Company and handled all sorts of war surplus material, selling from 50 to 75 airplanes and from 80 to 100 engines per year in addition to engine spares, airplane parts and other aircraft materials.

But the day of war surplus airplanes and parts is nearly over and the last two carloads of Wilcox's equipment was purchased by the Nicholas-Beazley Airplane Company of Marshall, and the services of Mr. Wilcox secured as parts manager.

Wilcox, because of his nine years' experience with aeronautical parts and supplies, will be a valuable man in Marshall, as the Nicholas-Beazley Company now stocks the largest supply of airplane material in the United States, having nine warehouses full of parts and supplies, all of which Wilcox will have charge of.

The Nicholas-Beazley Company has just taken over the entire output of the largest safety belt manufacturer in the United States and are supplying the commercial manufacturers with their safety belt requirements in addition to engines, instruments, bolts, nuts and other aeronautical material.

MR. AL. BUHROW, parachute jumper, has been signed up by Thompson Brothers Balloon Company, for the season of 1928, as parachute demonstrator, and while in off the road will assist in a general way at their parachute factory at Aurora.

MR. C. F. VAN SICKLEN of the Advance Aircraft Company reports that they have closed a 75-ship contract with E. M. Ronne, Buffalo Airport, Buffalo, N. Y., covering the western section of New York state and the northern boundary counties of the state of Pennsylvania.

Ronne will take ships throughout the winter months for sale and storage and his Spring delivery schedule is heavy.

Five ships a day is the schedule at the Advance Aircraft Company now and will be kept at that figure until more facilities are obtained to raise it.

The Northern Airways, Inc., of Wausau, Wisconsin, have been appointed Minnesota distributors for Wacos.

(Continued on page 684)

Making the air safe for humanity



1902

The motor car of 1902 was a noisy reminiscent of the boiler works. It spluttered—balked—and frightened everyone but the daredevil at the wheel. Many a person remembers the famous gag of the day, "Git a Horse," as the jerky, buggy wheeled, side cranking, chain drive, "horseless perambulator" made its way through the town.

Hordes of 'planes—turning—twisting—darting—climbing—roaring through the skies. Well ordered traffic—careful regulation to insure the safety of the fliers of Tomorrow. Police in the air who govern the aerial routes.

For the traffic of Tomorrow—as well as for the traffic of Today—safe fuel is of paramount importance. It must be light in weight, volatile, and absolutely dependable.

NATURALINE was developed for the purpose of meeting the conditions of the future—and the present necessities arising through the advent of high compression motors in the new day motor cars. 46 pounds lighter than U. S. Army Fighting Grade Gasoline—NATURALINE presents a measure of safety and dependability that is not found in other gasolines. It vaporizes instantly and surely, and for aviation or the modern motor, can not be excelled.

1927

In twenty-five years the motor car has developed to a point undreamed of in 1902, a specially designed car recently making the incredible speed of 203 miles per hour. Cars at a nominal cost perform amazingly. The man who does not own or operate a motor vehicle is the exception—the high compression motor giving a greater motor efficiency has just been introduced. What will the next twenty-five years do for the motor car? Or will it not be aviation?



CHESTNUT & SMITH

C O R P O R A T I O N

CHESTNUT & SMITH BUILDING—TULSA, OKLAHOMA

Say you saw it in AERO DIGEST

JOSEPH L. CATO has joined the organization of G. Elias & Brothers, Inc., Buffalo, N. Y., as production manager and aeronautical engineer. He will prepare and put into production the Cato light monoplane, which will be known as the Elias Model EC-1 (Elias Cato No. 1). It is being built in strict accordance with Air Commerce Regulations for approved type certificate and the U. S. Air Corps Airplane Designers handbook.

THE Second Annual Reunion of Naval Aviators will be held at the Commodore Hotel, New York City, on the night of December 9th.

Harry F. Guggenheim, who was a naval aviator during the war has been invited to preside. He was toastmaster last year.

Edward P. Warner, Air Secretary of the Navy for Aeronautics, Trubee Davison, Air Secretary of War, and Wm. P. MacCracken, Air Secretary of the Department of Commerce have been invited as honored guests.

WILLIAM P. GAFFNEY of E. S. Twining & Co., New York, sole distributors of "Flightex Fabric," reports that planes on all the long air mail routes are covered with Flightex.

On the New York-Chicago run there are 19 Douglas mail planes. On the Chicago-San Francisco run there are 25 Boeing mail planes and on the Chicago-Dallas run 8 Travel Air planes.

"Mail planes," Mr. Gaffney points out,

"are subjected to the severest kind of wear and tear and must be kept in perfect condition at the lowest cost at all times for safety and efficiency of air line operation. The fact that operators use Flightex for these heavy duty airplanes is, we believe, a fine recommendation."

ON Thanksgiving Day, Noel Wein, piloting a Stinson monoplane, arrived in Nome, Alaska, from Fairbanks, with three pouches of mail, some of which was dated in the States as late as November 15. During the winter months, when this territory is frozen in, mail delivery usually takes from two to three months.

Wein left on the 26th on the return trip to Fairbanks with four passengers and Christmas mail for the "outside". Despite 11-below-zero weather at Nome and 35 below at Ruby and Fairbanks, he experienced no trouble.

In the November, 1926, issue of AERO DIGEST, Mr. Wein, in the article "Alaskan Flying" describes his many interesting experiences flying in Alaska.

MISS OLIVE B. WILLIAMS, formerly with the Governor of Kentucky, is now president of the Aviation-Automotive-Engineering School located at 12 Queens Boulevard, Long Island City. Classes have been running for several months. On her staff she has a number of well trained men that have a great deal of experience in the aviation field.

AIRVIA BOOKING SERVICE, with main offices at Dwight Bldg., Kansas City, Mo., has been organized to coordinate the activities of all air service operators.

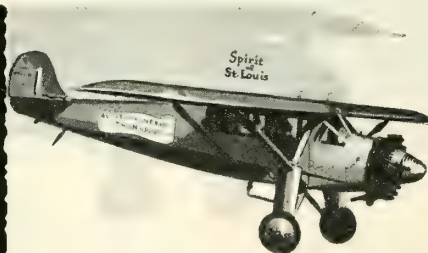
Tickets for airlines operating in more than fifty cities throughout the country are sold. Their agencies, to be established in leading hotels, clubs and other public places, will make the flying facilities on routes now operating easily available.

Airvia will cooperate with the Yellow Cab Companies and bus lines for quick transportation to and from airports. They will arrange connecting and sightseeing planes.

ON December third the 'observer' at the Drift Indicator sails for Paris to renew his acquaintance with Real Scotch that has that 'smokey' flavor and to join a family reunion. Incidentally while we are on the ground we will have a chance to see what is doing in European aviation circles.

AS we go to press we discover that the visitors register we planned to install this month has been overlooked. Now we have but little space and must rely on memory—hence the brevity of the list.

J. Don Alexander, president of the Alexander Aircraft Company; Eddie Stinson and W. A. Mara of the Stinson Aircraft Corporation; Charles McLean of Richmond, Va.; Paul Richter of the Aero Corporation of California; M. De Soete, the famous Belgian sculptor; and Fred L. Foster, representative of the Chestnut and Smith Corporation, Tulsa, manufacturers of Naturaline.



If you are to become an expert in Aviation you must work with modern equipment.

RYAN WHIRLWIND MONOPLANE Sister Ship of Col. Lindbergh's Spirit of St. Louis. One of several of our planes now in service.

COMMERCIAL AVIATION CALLS YOU!

Tremendous expansion is rapidly following the dawn of this new era of air transportation. Train to fly and to make the most of today's possibilities for you with a large transport company, actively engaged in flying—passenger, express, freight, aerial photography, surveying, etc.

COMPLETE ARMY AND NAVY COURSES—U. S. Licensed Men

This organization gives Army and Navy School courses in aero-dynamics, plane construction, motor mechanics, practical navigation, parachute operation and actual flight training, as well as the commercial branches of the industry. OX5, Hiss and Wright Whirlwind motors used—nothing but the most modern machines. The only school in Chicago having Wright Whirlwind motors today—necessary if you are to become an aviation expert.

Only U. S. licensed pilots, instructors and mechanics employed in our hangars, shops and classrooms.

GROUND WORK AT HOME—ACTUAL FLYING IN CHICAGO

You can start with your ground course at home through correspondence and finish intensively in Chicago at the million-dollar municipal airport on which our hangars, shops and classrooms are located—or you can come to Chicago at once.

\$300 to \$1000 a Month Free Employment Service

A five-year employment service free to our students and graduates. Earn while you learn and prepare for a \$300 to \$1000 a month position. Eight places on the ground for every pilot to be filled.

Our Guarantee: "The latest and most advanced training with one of the largest organizations of its kind in the world."

Hangar space for transient planes

Act! "The Airway," full of interesting facts about requirements, methods and opportunities is yours for 10c, coin or stamps. Worth many dollars to any interested man or woman whether 20 or 50 years of age. Use the coupon. **Now!**

AVIATION SERVICE AND TRANSPORT, Inc.
203 N. Wabash Ave., Dept. 1519, Chicago, U. S. A.
Send me your new book on commercial aviation, "The Airway."

Enclosed is 10c in { currency
 { stamps

Name

Address

Age

AVIATION SERVICE & TRANSPORT, Inc.
203 N. Wabash Ave., Dept. 1519, Chicago, U. S. A.

Say you saw it in AERO DIGEST

It's easy enough to say —

LET'S ADVERTISE

But how can a manufacturer or operator advertise when his market is so scattered and so unknown? How can the Aviation industry as a whole, advertise?

Whatever is done must be organized — every detail coordinated. Much can be learned from the early days of the automobile — the railroads — the steamships. But in Aviation we face an entirely new set of conditions — unprecedented.

Aviation by its nature is not a local problem. The airplane is an annihilator of distance. Air transport is wider flung than rail transport. Municipal ownership of airports precludes the development along lines comparable with the railroads. The large self-contained enterprises — the vertical trusts — are not yet in sight.

All of this makes the problem of advertising Aviation different. But we believe we have found a way out — at least a start. Our plan will be of interest to the individual manufac-

turer or operator as well as the Aeronautical Chamber of Commerce and the industry as a whole. Our ideas are practical — definite.

We would like to talk with manufacturers and operators who wish to build their business faster, more soundly and more profitably. We would like to meet with officials of other large industries who are serving Aviation with materials or parts. And we would like to discuss our ideas concerning the industry as a whole with the leaders in Aviation.

We have no schemes to sell. We are in dead earnest about the fundamental application of advertising to the business of Aviation. What we have to say will interest the small maker of planes, the big oil or rubber companies and the largest of the air transport operators.

REIMERS & OSBORN, Inc.

Advertising

285 Madison Avenue

New York



Say you saw it in AERO DIGEST

TECHNICAL



LAIRD COMMERCIAL AIRPLANES

THE LAIRD commercial plane is a three or four-seater biplane of medium power, designed for general commercial flying, primary training, or feeder-line transport service. The plane is powered with the 200 h.p. Wright Whirlwind, the 160 h.p. Curtiss C6, the 90 h.p. OX-5 engine, or any engine within this power range.

The general design throughout is simple and rugged. Particular attention has been paid to primary commercial requisites such as safety, economy, accessibility, and ease of maintenance. Strength factors conform to service requirements and to the standards of the Department of Commerce.

Comfort and convenience have been carefully considered for both passengers and pilot. The low top longeron and carefully designed cowling with door opening to passengers' compartment, provide easy access to the cockpits, while well designed and properly placed windshields afford excellent wind and weather protection. The cockpits are large and comfortable, with plenty of leg and arm room, and for cross country flying there is a compartment with ample room for luggage. Both cockpits are lined with leather, carried through from the fireproof bulkhead to the pilot's seat. The seats are comfortable and well upholstered. Steps are fitted to enable easy entrance to the cockpits and wide sidewalks have been arranged on the lower wings.

The fuselage structure is of duralumin tubing and each strut station point is fitted with steel sleeve fittings with sockets to accommodate the vertical and horizontal strut members, as well as terminals for the anchorage of the wire bracing. The forward portion of the fuselage is braced with 3/16-inch strand cable and with hard wire from the pilot's seat to the stern post. The use of duralumin in the fuselage reduces the weight of the structure and increases its life due to the weather resisting qualities of this material. The fairing is of light spruce strips, the turtle back being carried through to the stabilizer.

The engine mounting is built of steel tubing and is detachable from the fuselage. The engine cowling is well streamlined, and where the water-cooled engine installation is used the cowling completely encloses the

engine, preventing oil about the motor being blown back on the occupants of the machine. The engine exhaust outlets are fitted with manifolds with a view to adequate silencing.

The landing gear is of streamlined steel tubing. Excellent shock absorbers are fitted and the wheel tread is wide. The design of the landing gear attachment to the fuselage is such that either a split type or the full floating axle may be fitted optional with the purchaser.

The tail skid is a multiple steel leaf, swiveled to relieve the torque strain on the fuselage when taxiing. The use of rubber shock absorber in the tail skid is entirely eliminated.

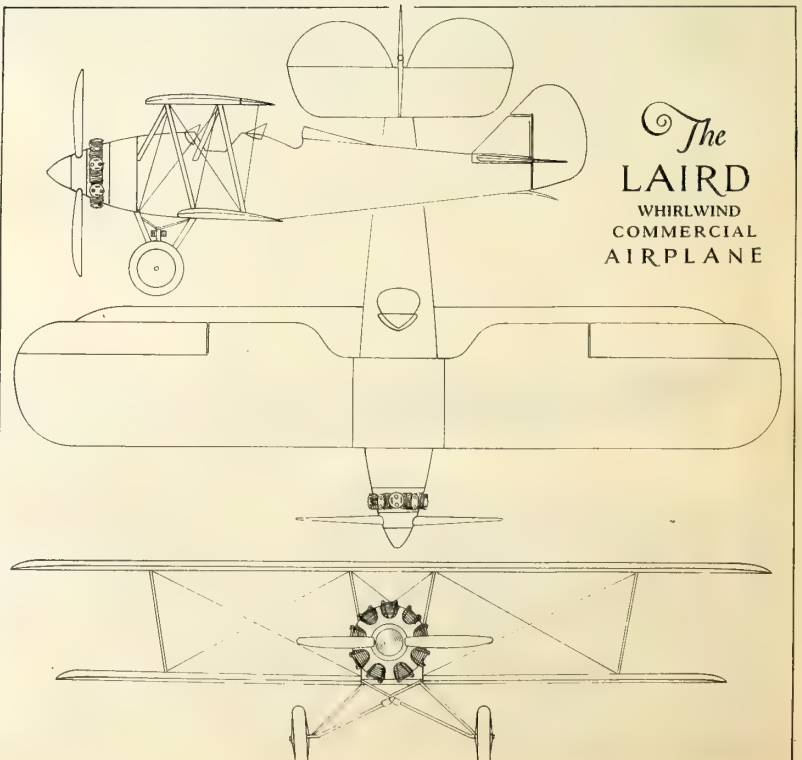
Wings are of conventional design, built with laminated spruce spars. Both laminations are routed inside between bolt holes,

forming a strong box spar. The ribs are of trussed reinforced plywood with spruce cap strips. Compression webs are solid spruce and the trailing edge is of steel tubing. Internal bracing is of No. 8 steel wire. Fittings are designed so there are no bolts running vertically through the spars.

Each aileron is controlled independent of the other by the use of the new "Arens" patented control unit. The use of this unit gives direct and positive control and eliminates the use of the pulleys and cables or bell crank systems. All wing and center section struts are of streamline steel tubing. Wing fittings, bolts, strut bolts, and aileron control horns are flush with the surface or completely housed.

Tail surfaces are entirely of welded steel tubing. There are two separate elevator control masts both being completely housed in the fuselage and fin. The horizontal stabilizer is adjustable and may be operated by the pilot during flight; this is accomplished by means of a straight lever mounted on a quadrant in the pilot's cockpit, with positive locks to hold it in the desired positions. The vertical fin is adjustable on the ground to compensate for engine torque.

Standard equipment with Curtiss OX-5 engine—Hartzell propeller and streamline wires. With Curtiss C-6 engine—Standard Steel propeller and streamline wires. With Whirlwind engine—Standard Steel propeller; Eclipse inertia starter; streamline wires; split axle landing gear with Sauzedde wheels





You Can Trust an AIR-KING

When you "take off" in an Air-King '27 — you have assurance of performance and dependability. It is designed and built to withstand the ordinary hard usage of student training and commercial flying — that is why it so quickly won the universal endorsement of seasoned pilots.

Welded seamless steel tubing fuselage, adjustable horizontal stabilizer, welded-in flying wire fittings, roomy cockpits with full width windshields, split type shock absorbing undercarriage, dash equipment and many other advanced features.



AIR-KING

NATIONAL AIRWAYS SYSTEM, Field 8, Lomax, Illinois

and brakes and balloon tires; running lights for night flying.

Specifications of Laird Commercial Planes
(With Curtiss OX-5 Engine)

Span, upper wing 34 feet
Span, lower wing 30 feet
Chord, upper wing 66 inches
Chord, lower wing 58 inches
Total wing area, with ailerons.....300 sq. ft.
Length, overall 23 feet 6 inches
Height 9 feet 3 inches
Wheel tread 84 inches

(Weights and Performances with
Curtiss OX-5 Engine)

Weight, light 1,350 pounds
Pay load 300 pounds
Wing loading ... 6-8 pounds per square foot
Cubic capacity of cockpit 20 cubic feet
Capacity of fuel tank.....60 gallons
Maximum speed 95 miles per hour
Cruising speed 80-85 miles per hour
Landing speed 40 miles per hour
Climb, first minute 600 feet
Climb, in 10 minutes 5,000 feet
Ceiling 16,000 feet
Take-off distance 250 feet
Cruising range 600 miles
Cruising endurance 6½ hours

(Weights and Performances with Cur-
tiss C-6 Engine)

Weight, light 1,500 pounds
Pay load 500 pounds
Cubic capacity of cockpit 25 cubic feet
Capacity of fuel tank 75 gallons
Maximum speed 120 miles per hour
Cruising speed 100 miles per hour
Landing speed 45 miles per hour
Climb, first minute 1,000 feet
Climb in 10 minutes 7,500 feet
Ceiling 18,000 feet
Take-off distance 200 feet
Cruising range 600 miles
Cruising endurance 6 hours

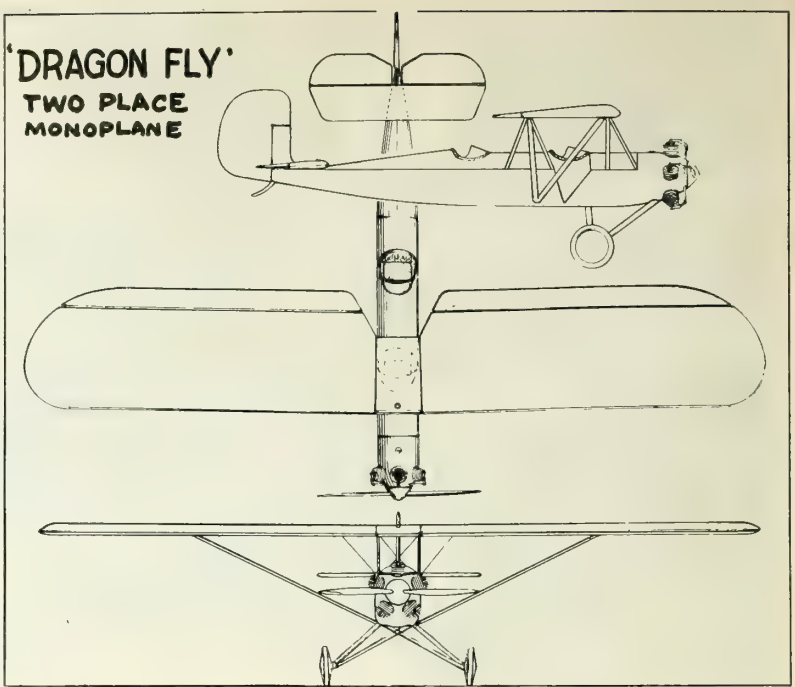
(Weights and Performances with
Wright Whirlwind Engine)

Weight, light 1,550 pounds
Pay load 800 pounds
Cubic capacity of cockpit 30 cubic feet
Capacity of fuel tank 80 gallons
Maximum speed 130 miles per hour
Cruising speed 110 miles per hour
Landing speed 40 miles per hour
Climb, first minute 1,350 feet
Climb, in 10 minutes 10,000 feet
Take-off distance 150 feet
Cruising range 600 miles
Cruising endurance 6 hours

DRAGON FLY MONOPLANE

THE designer of the Stiles "Dragon Fly" is Russell C. Mossman, of Chicago, a well known pilot in the middle west. It was designed to fill a demand for a medium priced, fast, new construction monoplane.

The simple and sensible design of the "Dragon Fly" makes it an ideal plane for the private owner and a logical type for training purposes or club work. Without



possessing great skill or technical knowledge, the owner pilot can maintain and keep it airworthy. The substantial wing bracing struts make it unnecessary to do any rigging whatever. The cowling can be removed in a few seconds rendering the magnetos, carburetor, etc., easily accessible for adjustment. Every part of the engine can be reached from the ground without difficulty.

The cockpit seats are roomy and comfortable, fully upholstered in black leather. Cowlings are sufficiently close and high to provide almost complete protection from the weather. Entrance to the front-cockpit is through a large door, which makes the cockpit as easy to enter as the ordinary motor car. There are no wings or wires to climb over. The front door has a width at the top of 26½ inches; door depth, 33 inches.

The landing gear is of special split type design which does not rely on cable bracing.

Power is supplied by the Detroit "Air-Cat" air-cooled engine, rated at 60-80 h.p. It consumes only 5 gallons of gasoline and one pint of oil per hour running at full throttle. Dual ignition is provided. The engine mounting is entirely of steel and may be removed from the fuselage by the withdrawal of four bolts. A fire-proof bulkhead isolates the power plant from the front cockpit.

Instruments regularly furnished are tachometer, altimeter, oil pressure gauge, oil temperature gauge, gasoline gauge and ignition switch. A full tool kit is provided, as well as covers for both cockpits, waterproof cover for the propeller, tire tools and pump. The fuselage and wings are covered with a high grade mercerized cotton cloth that exceeds U. S. Government specifications. A specially designed Hartzell propeller is used.

When stalled it is predicted that the plane will keel under full lateral control, affording

maximum safety in landing. The Clark Y wing curve is used.

The plane will be finished with six coats of dope and two coats of Duco, the standard color being a light blue. The first unit of three planes will be ready for delivery about January first and thereafter units of fifty will be put through at the beginning rate of three per week. At present the company is occupying 20,000 square feet of factory space on the south side of Chicago but plan to erect a plant in a small city outside of Chicago soon.

Dimensions

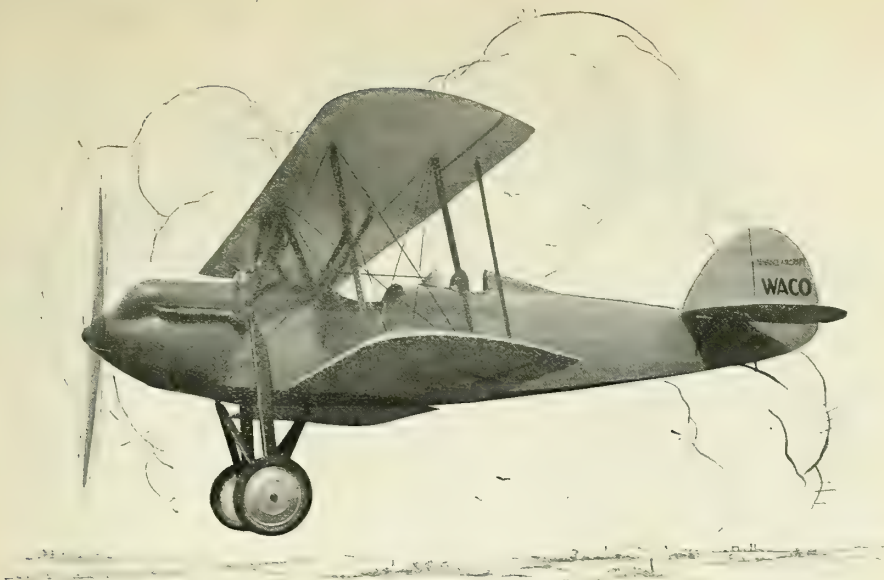
Wing span 36 feet
Wing chord 6 feet
Length overall 23 feet 11 inches
Height overall 8 feet 1 inch
Empennage width 8 feet 6 inches
Wing area 200 square feet
Tread 7 feet

Weights

Net weight 850 pounds
Pilot 160 pounds
Passenger 160 pounds
Gasoline—20 gallons center section 120 pounds
Gasoline—2½ gallons auxiliary tank 15 pounds
Oil—6 quarts 12 pounds
Baggage 50 pounds
Total weight 1,367 pounds

Performances

(Estimated to be within 5 per cent)
Maximum speed 105 miles per hour
Cruising speed at 1000 feet 85 miles per hour
Landing speed 38 miles per hour
Length of run to take off 180 feet
Length of run after landing 260 feet
Rate of climb at ground level 800 feet per minute
Cruising radius 450 miles



Announcement of Interest to Prospective "WACO-Ten" OX5 Purchasers

The end of new OX5 motored ships is about 120 days away. Those who are wise and appreciate this fact will exert every effort to get their WACO from existing stocks — to assure their ownership when Spring and ideal flying weather returns.

WACO Dealers remembering conditions that existed during the hectic Spring, Summer and Fall of this year, when no manufacturer could deliver enough planes, are taking stocks of the WACO Ten at the rate of five daily

and any of them can supply you with this leader in the commercial field. Decide to buy now — don't wait and pay more.

The opportunity now prevails for you to get the most exceptional OX5 motored job on the market at the same old production price — no increase due to exhaustion of motor supply. WACO Dealers will have them. Investigate and buy now — rather than wish you had next Spring.

A letter or card will bring complete details and the name of our nearest distributor.

APPROVED TYPE CERTIFICATE NO. 13



BELLANCA PLANES IN PRODUCTION

By
George F. McLaughlin

THE first group of six Bellanca cabin airplanes is ready for test flights in preparation for an attempt to establish a new duration record. Since Chamberlin and Acosta made their record flight of 51 hours, 11 minutes in the Bellanca plane which Chamberlin later flew from New York to Germany, the present world's duration record was made by the Germany pilots Risticz and Edzard, 52 hours 23 minutes. It is this record that an effort will be made to exceed. The plane was transported from the factory of the Bellanca Aircraft Corporation at Arlington, Staten Island, New York, to Miller Field, to be set up and flown to Long Island.

Built to the order of Mr. A. Martine, Mr. Bellanca has fitted the new production monoplane with a special gasoline tank in the cabin in place of the cabin seats which will feature the regular commercial model. Although the general structure of the first six planes is similar, each model will be arranged for the purpose of its owner. The second plane, for example, is being constructed for Roger Kahn whose specifications call for a cabin fitted with seats for 4 or 5 passengers in addition to the pilot. This ship should be ready shortly after the middle of December. As the normal load it will carry is less than the duration flight ship of Mr. Martine, its wing span is only 46 feet.

The third plane scheduled is a special job about which Mr. Bellanca wishes to make no announcement at this time. A later plane in the first group is for Mr. Salvelli.

The span is 50 feet. Chord, 6 feet 7 inches; length over all 4 feet 9 inches; height, 8 feet 6 inches; wing area, 300 square feet.

Similar in many outward respects to the successful *Columbia* the improvements in detail are expected to result in even greater efficiency than the older models. The dimensions, structure and general arrangement of the fuselage is almost exactly like the *Columbia*. The skeleton framework is of round steel tube with all joints welded. For ease of transportation, erection and replacement, the fuselage is made in two parts, divided aft of the wing. Four bolts are used to fasten the parts together; by taking out these and separating the tail control cables, the entire rear part of the body may be

removed in a few minutes. Square section tie rods are used throughout for the diagonal bracing.

Sliding windows are provided at either side of the cabin and the entire roof over the pilots and fuel tank space is covered with transparent celluloid. Non-shatterable glass windows are provided at the front, giving excellent vision.

The landing gear is an original and unusual design, rugged in construction and simple in operation. Wheels have a tread of 75 inches. There is no cross axle. The heavy tubular steel vertical members are part of an inverted U which spans the lower fuselage longerons. The upper parts of the arms are provided with welded-on flanges which hold the rubber shock cord in position. Surrounding the landing gear struts are box structures welded to the fuselage and provided with tubular steel fastening rods to which the shock cord is bound.

Wings are built up of wood and braced with steel tie rods. The solid spruce spars are routed out to I section between fittings. Extra thickness of spars at brace strut fittings is provided by plywood stiffening plates at either side of the beam. The wings are divided into two panels which attach at either side of the fuselage, at the top longerons. Compression struts across the fuselage continuing the wing spars, are formed of welded sheet steel hollow box struts. The ribs are built up with Warren truss spruce members. Ribs have a maximum depth of 15 per cent of the chord.

The wing curve is one developed by Mr. Bellanca. Its principal characteristics are: moderate travel of center of pressure, high maximum lift ($K_y = .0034$) and low drag at high speed. Lift to drag ratio is 21.

Gravity fuel tanks of aluminum are built into the wing panels next to the fuselage. Each tank has a capacity of 43 gallons. Plywood panels are used under the wing at the tank mounting and tanks may be removed through the top of the wing. For radio transmission a rubber insulated wire is set in the wing, all along the rear of the spruce nose beam. Wires for the wing-tip navigation lights are also attached inside the

nose beam. Wings are of constant thickness and section up to the two outer ribs, from which point the wings taper above and below. The wing tips are rounded off with balsa wood fairing.

Streamline brace struts from the lower fuselage longerons to the wings are of spruce with curved mahogany plywood leading edges, spruce ribs and trailing edges. They have a chord of 18 inches, except at the upper ends where they taper down sharply as they approach the wing. They are covered with fabric like the wings. To avoid interference with the air flow under the wing, the wooden wing struts terminate a few feet from the wing. The brace structure near the wing is carried out by a steel tube strut system braced fore and aft by diagonal streamline wires. Struts are adjustable in length and their lower ends means is provided for altering and setting the incidence.

Conventional ailerons are used. They have a narrow chord and high aspect ratio. They are carried on auxiliary beams. In construction the ailerons are built with the wings, with ribs continuous over wings and ailerons, being separated when the whole unit is completed. They are operated by short built-up sheet steel control horns, in the usual manner. The finished wings with covering and doping weigh 165 pounds.

Tail surfaces are built entirely of wood, fabric covered. The rudder, of the balanced type, has an area of 15 square feet. The edge is formed of laminated spruce. The fin has an area of 7.5 square feet. Stabilizer is adjustable during flight; area 27 square feet. Elevators are built up like the rudder, with laminated spruce edges. Area 17 square feet. The tail skid is of extremely simple construction. The heavy birch skid is pivoted below the stern post in a bronze bushing and rubber shock cord binds the forward end of the skid to a longitudinal steel tube member welded into the fuselage. As the entire unit is small, completely outside the fuselage and easily accessible, replacement and repair of this member is facilitated.

Dual controls are provided for the pilots who sit side by side. Two emergency dump valves permit quick emptying of the cabin tank which weighs 140 pounds and has a capacity of 360 gallons. There is a space of about two feet between the cabin roof and the tank. On the tank extra 5-gallon tins of gasoline will be carried on the endurance flight, to bring the total fuel capacity to 520 to 525 gallons.

As far as performance is concerned, Mr. Bellanca with his usual modesty, hesitates to give out figures until he has proven them by actual performances. However, the following estimates will give an idea of what may be expected. Maximum speed with full load 130 miles an hour; minimum speed, at the end of flight with fuel tanks nearly empty, 35 miles an hour; economical low speed for the endurance flight, 60 miles an hour. The weight of the plane empty, with instruments, 1850 pounds. Total weight, loaded, 5600 pounds. 525 gallons of gasoline should give a cruising radius of 5500 miles and a duration of not less than 60 hours.



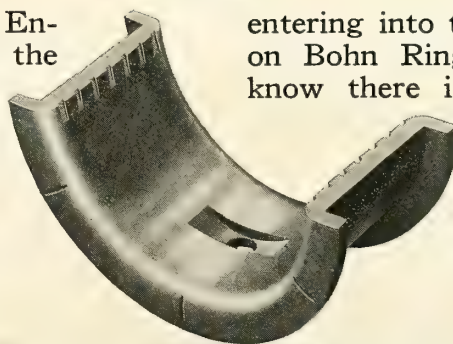
The new Bellanca monoplane set up and ready for covering.



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The Avimeta Type 132 Transport

THE trimotored commercial airplane, type A.V.M. 132, constructed by the Société Avimeta of Courbevoie, France, is an all-metal monoplane. The structure and the covering are made of alferium, a light alloy of high strength produced by the Schneider Company.

The wing of the monoplane is of cantilever construction and is tapered in plan and form and has rounded tips. It has two main beams.

On each side of the fuselage there is a framework attached to the longerons which supports the motor mountings. The covering of the struts is of thick sheets of alferium corrugated and bent to form a streamline profile.

The wing, made in two parts, is attached to the fuselage by four easily detachable joints. The aileron runs the whole length of the semi-span. This type of aileron, mounted on all the airplanes constructed by the Société Avimeta, offers the advantage of not causing secondary stresses in controls due to the bending of the wing in flight. Furthermore, being relatively short, it presents also the advantage of an easy and rapid detachability.

The fuselage is rectangular and is made in three parts: the front part which contains the cabin, pilot's cockpit, interior passage and also a baggage room. It is made of rigid trussing by which the diagonals and uprights are located in such a way as to permit a comfortable interior cabin with large windows and door. This large cabin (12 feet, 9½ inches long, 5 feet, 3 inches wide, and 6 feet high) can be divided into several compartments depending upon the type of service in which the plane is to be used. It can be made a 10-passenger cabin, Pullman type,



The all-metal French Avimeta type 132 tri-motored transport monoplane.

a restaurant or even divided into two cabins with sofas and a lavatory.

The middle part is used only to join the front and the rear parts. It is made of four tubular longerons braced by light members to

which is attached the covering which assures the rigidity of the structure.

The rear part supports the control surfaces.

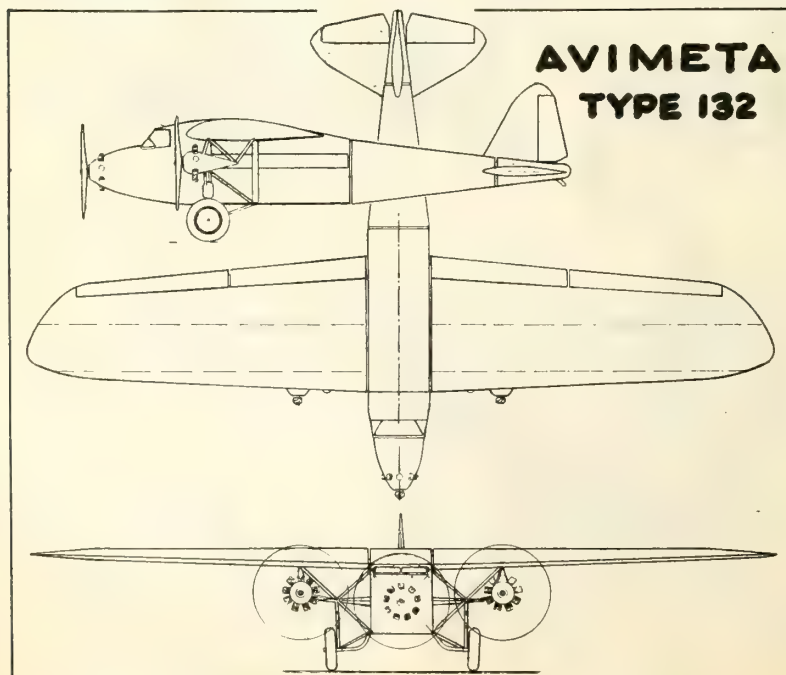
The control surfaces comprise: A horizontal stabilizer which can be adjusted in flight; balanced elevators; fins adjustable in flight, interchangeable with one-half of the stabilizer; and a rudder balanced along its length and interchangeable with one-half of the elevators.

All the surface controls are rigid, made of alferium tubing with intermediate bellcranks to avoid torque of the tubes. All the control connections are made with ball bearing joints.

The chassis is made of two axles hinged to the lower longerons of the fuselage and braced horizontally by a V brace. The shock absorbing mechanism consists of rubber rings of special type placed near the wheel. It is easily accessible for adjustment. The loads are transmitted partly into the beams and partly in the upper structure of the fuselage.

The wheels are 49 1/5 inches by 9 5/6 inches and the landing gear has a tread of 13 feet, 5 2/5 inches.

The plane is powered with three air-cooled Salmon 9 AB engines of 230 h.p. each. The central engine is installed in the forward part of the fuselage and the other two are attached to a steel tubular structure in the wings. Each motor nacelle contains all the necessary accessories for the operation of the engine.



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Wyo., Mont. and W. Neb.—Wyoming Airways, Inc., Casper, Wyoming
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La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
W. Va. and E. Ohio—Lyle H. Scott, 828 2nd St., Marietta, Ohio

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Mississippi—Tri-States Airways, Bry Block, Memphis, Tenn.
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So. Carolina—Errett Williams, Spartanburg, S. C.
Me., N. H., Vt., R. I. and Mass.—Massachusetts Airways Corp., 1597 Main St., Springfield, Mass.
W. Penn. and N. E. Ohio—Lt. Jack P. Morris, Pittsburg Airport, Pittsburg, Pa.
Northeastern Indiana and Western Ohio—Indiana-Ohio Aero Corp., 203 Carroll Bldg., Ft. Wayne, Ind.
Wisconsin—Hall Aircraft Co., 101 Scott St., Wausau, Wis.
Eastern Oregon—Bell Line Air Service, Inc., Terminal Bldg., Portland, Oregon
W. Mo. and E. Kan.—Bennett Eaglerock Sales Co., 223 W. 12th St., K. C., Mo.
Okla. and Tex. Pan.—Southwestern Airplane Sales Corp., Britton, Okla.
N. M. and Cen. Texas—Browning Airplane Sales, Wichita Falls, Texas
So. Texas—Marion P. Hair, P.O. Box 420, San Antonio, Tex.
So. Cal. and Ariz.—Aero Corporation of California, Western Ave., at 99th St., Los Angeles
No. California—Jas. L. Mayberry, Menlo Hotel, Oakland
W. Washington and W. Oregon—Story Eaglerock Sales, 409 No. Yakima, Tacoma, Wash.



ASSOCIATED WITH ALEXANDER INDUSTRIES, Inc.

Room 403, Alexander Industries Building,
 Denver, Colorado

Fuel tanks are installed in the wings on each side of the motor mountings and can be emptied in flight; gravity feed is used. Oil tanks are placed in the wings above each engine.

The pilot's cockpit is equipped with dual controls and has the most modern instruments for navigation and operation. A radio transmitting and receiving set assures constant communication with stations on the ground.

General Data, Weights and Performances of the Avimeta Monoplane

Span overall	71 feet 11 inches	
Length overall	46 feet 11 inches	
Height overall	12 feet 4 inches	
Wing area	753½ square feet	
Weights and Performances	(Day Plane)	(Night Plane)
Weight empty...	5,952 lbs.	6,217 lbs.
Weight of crew..	353 lbs.	353 lbs.
Weight of fuel..	1,808 lbs.	1,102 lbs.
Pay load.....	2,645 lbs.	1,985 lbs.
Gross flying weight.....	10,758 lbs.	9,657 lbs.
Loading per sq. ft.	14.3 lbs.	12.8 lbs.
Loading per h.p..	15.6 lbs.	14.0 lbs.
Maximum speed..	113 m.p.h.	114 m.p.h.
Cruising speed...	106 m.p.h.	106 m.p.h.
Time to climb to 6,560 ft.....	19 min.	13 min.
Absolute ceiling..	12,300 ft.	15,400 ft.
Cruising range...	560 miles	375 miles



The EAGLEROCK SEAPLANE

THE new Alexander Eaglerock seaplane as introduced by Atlantic Airways, Inc., of New Rochelle, N. Y., is a standard long-wing Eaglerock mounted on a pair of specially designed Edo all-metal dural floats. Care has been exercised throughout the construction of both the plane and the floats against corrosion by sea-water. The steel fuselage and all exposed metal parts of the plane are coated with several applications of Lionoil to prevent rust.

The Edo dural floats are treated by their new electrolytic rust proofing process which prevents corrosion, and in addition the new metal Alclad is used freely on all exposed parts. Each float has three watertight compartments and wide walkways are provided for the easy ingress and egress of passengers.

In recent tests made during the week of November 19th the seaplane with 2 passen-

gers, pilot and 49 gallons of gas took off in a 35 mile breeze in 18 seconds. In another tests with 2 passengers, pilot and 30 gallons of gas a take-off was made in 16 seconds in a twenty-five mile breeze. In a dead calm with 2 passengers, pilot and 30 gallons of gas, the take-off required 32 seconds.

Rough water landings have been tried and it is reported that the seaplane landed effectively, head into the wind, in a three foot seaway. Successful cross-wind landings have been made and in the tests down-wind and cross-wind take-offs were made with no tendency of nosing over. Taxiing on the water is easy with the seaplane; it handles more like a boat and does not yaw or veer off its course.

The tests were all made by F. W. Dairymple of Atlantic Airways, Inc. A dural propeller with a diameter of 8 ft. 6 in. and a pitch of 5 ft. 6 in. was used. Over a measured course of 68 miles the seaplane maintained an average speed of 78 miles per hour with the motor turning up to 1350 r.p.m.

In addition to the regular factory equipment, standard equipment of the De Luxe model Alexander Eaglerock seaplane includes dual controls, Curtiss Reed dural propeller and spinner, special Edo floats, Post electric self-starter, navigation lights, Star compass, light anchor and five fathoms of mooring line and Mot-ac hot water cockpit heater. The heater in the pilot's compartment supplies a volume of warmth sufficient to keep the pilot comfortable at all times.

COMBUSTION TIME IN ENGINE CYLINDER AND ITS EFFECT ON ENGINE PERFORMANCE

By CHARLES F. MARVIN, JR.

Synopsis of N.A.C.A. Report No. 276

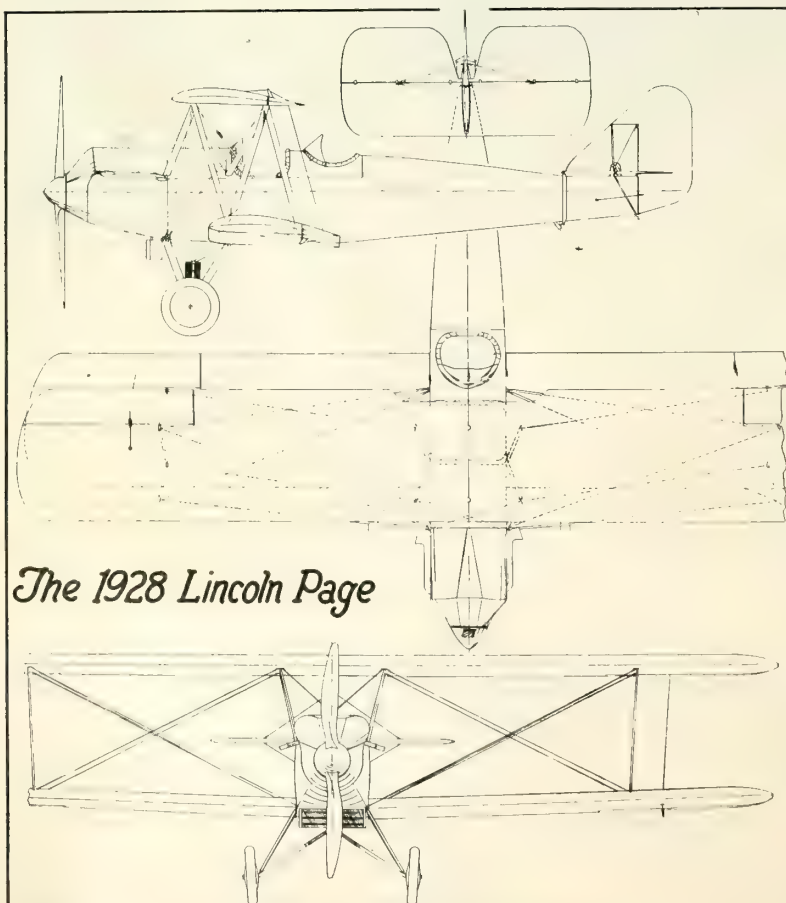
AS part of a general program to study combustion in the engine cylinder and to correlate the phenomena of combustion with the observed performance of actual engines, this paper, which was outlined by Mr. S. W. Sparrow, and the work undertaken at the request of the National Advisory Committee for Aeronautics, presents a sketchy outline of what may happen in the engine cylinder during the burning of a charge. It also suggests the type of information needed to supply the details of the picture and points out how combustion time and rate affect the performance of the engine.

A theoretical concept of a flame front which is assumed to advance radially from the point of ignition is presented, and calculations based on the area and velocity of this flame and the density of the unburned gases are made to determine the mass rate of combustion. From this rate the mass which has been burned and the pressure at any instant during combustion are computed.

This process is then reversed in an effort to determine actual rates of combustion and flame velocities from the pressures as recorded on indicator diagrams.

The effects of different rates of combustion on engine performance are then discussed and the importance of proper spark advance is emphasized.

Report No. 276 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.



The 1928 Lincoln Page

Outline drawings of the new Lincoln Page, described in the November Aero Digest.



Get Real Training in Commercial Aviation

COMMERCIAL Aviation is sweeping the country! The development of this great business is amazing. Everywhere there's aerial activity. This calls for men—trained men—lots of them! It's the opportunity of a lifetime for men with ambition. *Thoroughly* trained men will get the Big Positions—in a business that's full of romance—thrills—big pay!

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The PRUDDEN ALL-METAL MONOPLANE

THE new 3-motored all-metal light plane designed by Geo. H. Prudden at San Diego, Cal., has a span of 52 feet, a cord of 7 feet, a net area of 350 square feet, a length of 35 feet and a height of 10 feet. It weighs 2250 pounds. The cruising speed, with a full pay load, will average about 100 miles per hour. It will take off with a full load in 400 feet. Its landing speed is approximately 45 miles per hour. Its ceiling is 16,000 feet. It has stabilizers adjustable within four degrees. Its gasoline tank holds 92 gallons. With a gasoline consumption of 7 gallons per hour per engine, the plane can cruise for 4½ hours. The new plane carries 6 passengers and has a pay load capacity of over 1000 pounds.

Ryan-Siemens radial air-cooled engines of 125 horsepower each supply motive power. The ship is so balanced that it can cruise easily on any two of the engines or glide for over 40 miles with one engine running. Pyrene at pressure is carried to all engines so that fire, should it break out, could be extinguished in a few seconds. These engines are so silent that passengers in the cabin can converse in ordinary tones while in the air.

The ship is made entirely of corrugated duraluminum, a metal stronger than mild steel and as light as aluminum. Air shock absorbers on the split landing gear and on the tail skid make it practically impossible to detect any jolt when the plane settles on the ground.

Non-shatterable, unbreakable, safety glass is used in the cabin. The interior is upholstered in leather and contains a lavatory.

The operation cost of the ship is approximately 6½ cents per mile. The planes will sell for \$25,000.

MEASUREMENT OF PRESSURE THROUGH TUBES IN PRESSURE DISTRIBUTION TESTS

By PAUL E. HEMKE

Synopsis of N.A.C.A. Report No. 270

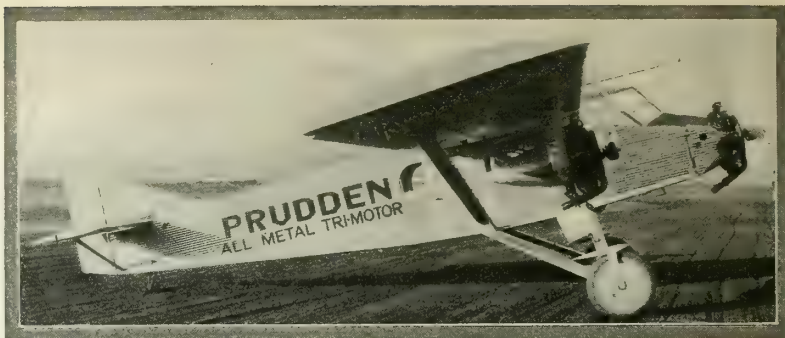
THE tests described in this report were made by the National Advisory Committee for Aeronautics to determine the error caused by using small tubes to connect orifices on the surface of aircraft to central pressure capsules in making pressure distribution tests.

Aluminum tubes of 3/16-inch inside diameter were used to determine this error. Lengths from 20 feet to 226 feet and pressures whose maxima varied from two inches to 140 inches of water were used. Single-pressure impulses for which the time of rise of pressure from zero to a maximum varied from 0.25 second to 3 seconds were investigated.

The results show that the pressure recorded at the capsule on the far end of the tube lags behind the pressure at the orifice end and experiences also a change in magnitude.

Analysis of pressure distribution tests made on airplanes in flight shows that the recorded pressures are slightly higher than the pressures at the orifice and that the time lag is negligible. The apparent increase in pressure is usually within the experimental error, but in the case of the modern pursuit type of airplane the pressure increase may be 5 per cent. For pressure distribution tests on airships the analysis shows that the time lag and pressure change may be neglected.

Report No. 270 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.



The Prudden monoplane with three 125 h.p. Ryan Siemens engines.

CIVIL SERVICE EXAM.

ASSOCIATE AERONAUTICAL ENGINEER

ASSISTANT AERONAUTICAL ENGINEER

THE United States Civil Service Commission has announced the above open competitive examinations.

Applications for these positions must be on file with the Civil Service Commission at Washington, D. C., not later than December 27.

The examinations are to fill vacancies in various branches of the service throughout the United States. At present there is a vacancy in the position of associate aeronautical engineer in the Naval Aircraft Factory at Philadelphia, Pa.

Full information may be obtained from the United States Civil Service Commission at Washington, D. C., or the secretary of the United States civil service board of examiners at the post office or custom house in any city.

BUTLER FUEL FILTER

THE BUTLER FILTER, made by the Butler Manufacturing Company, removes foreign matter from gasoline, including water, scale, sand, etc., that cause trouble in pipelines and carburetors, and eliminates foot valve trouble.

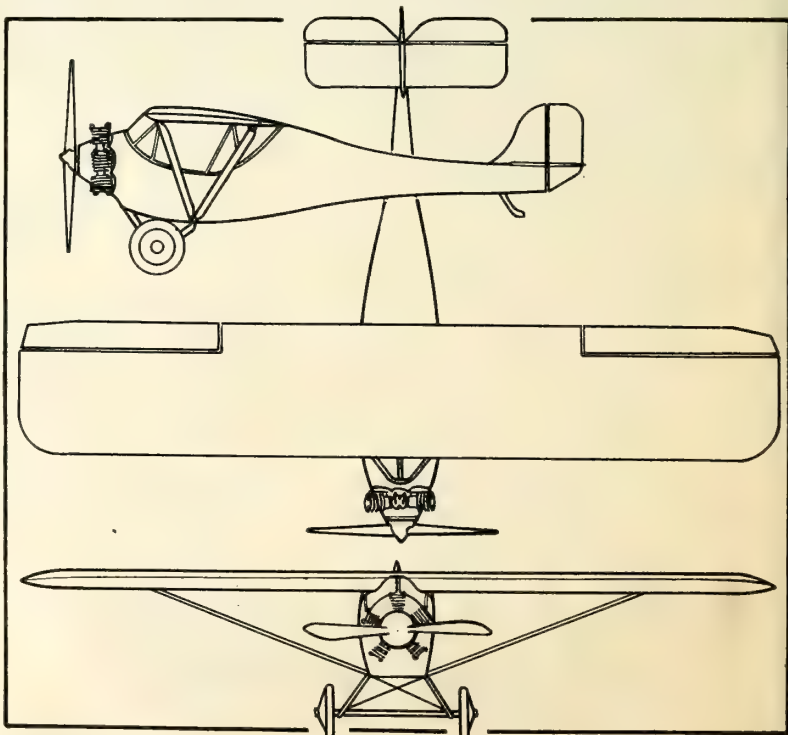
It is scientifically constructed on a simple basis and its operation is simple and easy. There are no parts to get out of order.

The filter is 78 inches high over all; diameter is 24 inches; height of tank 60 inches. Two copper steel perforated forms, 2 filtering sacks, 1 perforated guard.

4 inch hand hole in bottom for sediment cleanout, 2 inch intake in center bottom, 2 inch outlet near top in body, 1 inch liquid drain outlet with valve in body near bottom, 5/8 inch gauge glass 18 inches long.

Bolted on cover that is removed when filtering sacks are cleaned out.

Welded construction throughout.



CENTRAL STATES "MONOCOUPÉ"

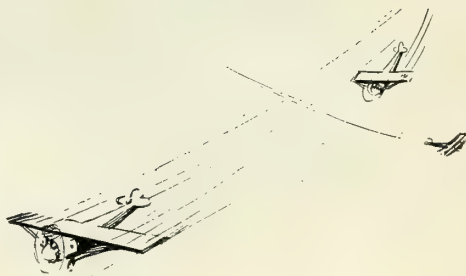
which was illustrated and described in detail in the October issue of Aero Digest.

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THE RYAN-SIEMENS AIR-PLANE ENGINE FILLS AN ECONOMIC NEED IN COMMERCIAL AVIATION by providing 5, 7 and 9 Cylinder Radial Air-cooled Engines, light in weight and developing 70, 100 and 125 H. P.

These engines [known in Europe as the Siemens-Halske]. . . are a sturdy simple type, thoroughly proven over a period of thirteen years and perfected by 7,000,000 miles of actual flying.

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WESTERN NEWS

THIRD WORLD FLIGHT COMMEMORATION MEET

A TREMENDOUS crowd, estimated between fifty and seventy thousand people, gathered at Clover Field, Sunday, November 20, to witness the races, air circus, and exhibition of wartime and modern aircraft and accessories. The occasion was the third Annual World Flight Commemoration Meet, which was a success from start to finish.

The aerial exhibitions kept the audience interested and on their toes from 10.30 a.m. until 5 p.m. The Exhibition Hall was crowded with enthusiasts all day, and the enclosure reserved for modern planes was packed with people inspecting the latest planes.

Two large army hangars were nicely decorated for halls and the exhibits were of great interest. Five old war planes were shown: a Fokker D-7 pursuit, used by the central powers from 1916 to the end of the war; a British S-E-5 pursuit used by the Allies from early '17 to the end of the war; a Thomas Morse Scout used by the Allies for the same period; a French Spad used by French and Allies from 1915; a British Snipe pursuit plane, with its big Bentley rotary motor, owned by one of our big movie directors.

The Crawford Airplane Co. of Venice had an exhibit of ten motors of different types, parts, etc.; Thunderbird Aircraft, a photographic and wing construction display; Desmonds air togs, uniforms, helmets and goggles; Kinner Airplane and Motor Corp., an unassembled motor and parts; George A. Hunter Engineering and Manufacturing Co., a display of novelty aviation World Flight smoking stands; Russell Parachute Co., para-

chutes and packs with a demonstrator; "Western Flying," a photographic display of eastern and western built ships; Haskellite Manufacturing Co., their products, Haskellite plywood and Plymetl; Curtiss metal propellers; Menasco Motor Co., air-cooled and water-cooled Salmson engines; Claude Ryan, Ryan-Siemens nine-cylinder radial air-cooled engine; Western College of Aeronautics, Wright Whirlwind engine; Aero Corporation of California, valve assembly, flying coats, goggles, helmets; the Douglas Co., construction parts of Douglas planes.

In the latest type plane enclosure the Bach Aircraft Co. exhibited their ten passenger Air Yacht; American Aircraft Corp., a brand new Fairchild cabin plane; the B. F. Mahoney Co., their latest "Ryan B-2" Brougham; International Aircraft, their latest Whirlwind motored 4-place plane; Larry Brown, his 3-motored monoplane; a plane designed and built by Tokio at the Crawford plant; Scoles and Henderson showed for the first time on the West Coast the new American Eagle; Kinner, his latest sport plane with his own motor; and the Lockheed Company, their beautiful monoplane.

At 10.30 a.m. the Bach Air Yacht, with eight passengers and two pilots, took off for a pathfinding trip over the thirty-mile course, stopping at Inglewood and Van Nuys, the two points of stop for the racers.

Following this was a formation of Army and Navy planes and their 40-mile race over the World Flight Course, which finished in the following order: 1st, Lieut. Burroughs—time, 20 minutes 45 seconds; 2nd, Lieut. James—time, 21 minutes 8 seconds; 3rd, Captain Farrell—time, 21 minutes 32 seconds; 4th, Lieut. Campbell—time, 21 minutes 46 seconds.

The second event was a balloon straining contest, won by Lieut. Tomlinson—time, 1 minute 34 seconds; 2nd, Lieut. Burner—time not given.

The third event was a Navy training race. Winner, Lieut. Dyer—time, 25 minutes 10 seconds; 2nd, Lieut. Hawkins—time, 26 minutes 43 seconds; 3rd, Lieut. Berner—time, 37 minutes.

The fourth event, a civilian race for 200 h.p. planes, had four entries. The winners were: 1st, Leo Nomis in Vic Flemings' Fisk built ship—time, 26 minutes 32 seconds; 2nd, George Lyle in his "Hisso" motored Stearman—time, 27 minutes; 3rd, T. McAllister—time, 34 minutes 45 seconds.

The fifth event, a civilian race for planes of 100 h.p. had twelve entries: Winner, Lee Willey, Aero Corp. of California's Eagle-rock—time, 26 minutes 30 seconds; 2nd, Jack Burrows, Western College of Aeronautics' Thunderbird—time, 29 minutes; 3rd, C. Batt—time, 34 minutes 10 seconds; 4th, Lee Flanagan, Aero Corp. Eaglerock—time, 38 minutes 50 seconds; 5th, J. Brusse, Kinner Sport plane, Kinner motor—time, 51 minutes 30 seconds (lost en route). Mr. Kinner who was flying another of his own make planes reports that he was leading the field into Van Nuys when on landing he struck a ditch and nosed over, which put him out of the race.

Between the events and while the racers were going over the course, the audience was entertained with stunt flying by Army, Navy and civilian fliers, parachute jumps, wing walking by Fred Osbourn and C. Brunt and other aerial acrobatics.

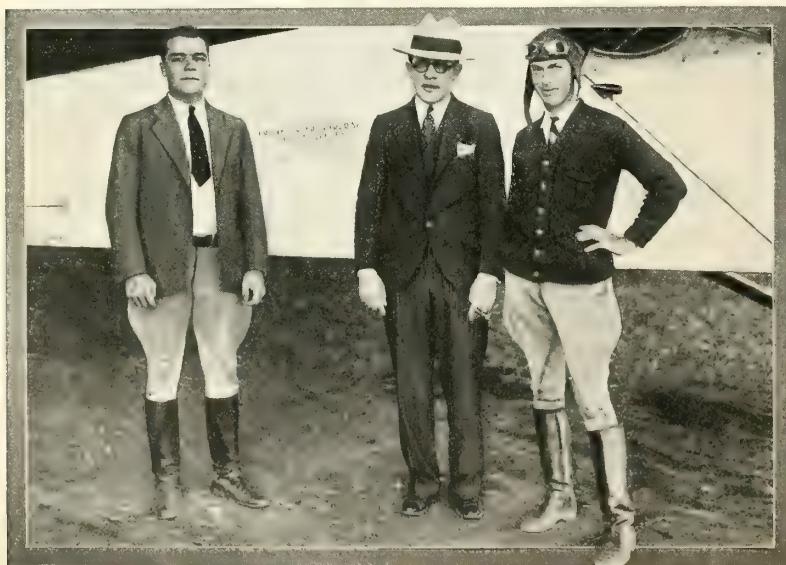
A feature of the meet was a sham battle between a Boeing pursuit plane and Al Wilson in his "Pusher" plane. This was a good demonstration of the difference in maneuverability between a modern pursuit plane and the old wartime planes.

Too much credit cannot be given to the committee who handled the meet, especially to Lieut. Burgess, for its success.

THE L. A. EXAMINER AVIATION PAGE

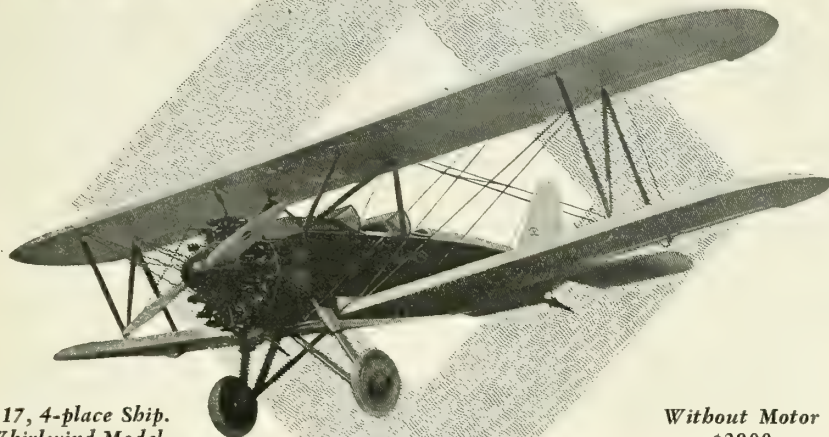
THE *Los Angeles Examiner*, with its Sunday issue of November 13th, began its new page feature, headed "World of Aviation," scheduled to appear every Sunday as a part of its large Automotive Section.

The interest of the *Examiner* in aviation extends beyond its editorial support and the use of planes by the editorial department in the pursuit of "beats." Recently, the advertising department of the paper used an airplane to establish contact with a prospect who otherwise could not have been reached in time. Another representative of the advertising department also used a plane recently to fly to San Diego and return to deliver a talk before the San Diego Advertising Club, thus reducing to one and one half hours a trip that otherwise would have meant an overnight stay in San Diego and the loss of an entire day from the office.



Frank Baker, Baker Airport; Capt. Wight, head of the aviation page of the Los Angeles Sunday Examiner; and Bob Blair, Baker Airport.

The INTERNATIONAL



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"INTERNATIONAL SATISFACTION" is not a catchphrase evolved to sell aircraft. It is a fact, proven time and again by letters of commendation sent to us by purchasers of International ships.

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INTERNATIONAL Aircraft CORPORATION
LONG BEACH, CALIFORNIA

"BUILT TO A STANDARD—NOT TO A PRICE"

WESTERN AIR EXPRESS' SUCCESSFUL OPERATION

A PERFORMANCE record unbroken by accident or injury in eighteen months of flying; distribution on October 1, of what is believed to be the first earned dividend ever paid to stockholders in a company engaged solely in air transport and dependent for its revenue upon the use made of its service; announcement of its selection as the first recipient of an equipment loan from the Daniel Guggenheim Fund for the Promotion of Aeronautics to be used for the installation of a model passenger airline between San Francisco and Los Angeles and forecast of a healthy expansion program in its acquisition by bid of the Cheyenne, Denver, Colorado Springs, Pueblo air mail route have combined to focus attention of the aeronautical world on the activities of Western Air Express, Inc.

This company, flying the Los Angeles to Salt Lake City airway, would seem to have mastered every phase of the air transport industry and to have reduced to practical application many, if not all, of the heretofore nebulous theories dealing with the commercial utility of the airplane. A study of its achievements, however, shows that there is nothing either intricate or secret behind the processes which have made for its success. Western Air Express, Inc., have made good by applying to air transport those same simple and easily recognized principles that govern all sound business practice.

Two years ago a group of influential business men and financiers of Southern California decided to take advantage of the provisions of the Kelly bill to give Los Angeles direct aerial contact with eastern United States. To head this movement as president and general manager, they selected Harris M. Hanshue, with whose ability as a business executive and administrator they were familiar from his long and successful association with the automotive industry in the west. To assist him as a technical advisor in the capacity of vice-president in charge of operations their choice fell upon Major C. C. Moseley whose skill as an aviator and whose knowledge of aircraft was common knowledge. This procedure of selecting a man for the job was merely good business

as they understood it. It is a practice in accordance with Hanshue's own idea of business policy as is evident from the method pursued in acquiring personnel for the Western Air Express, Inc., organization.

When it came to selecting pilots and mechanics the best available men were chosen. Determination of ability was based upon official records, and the operating personnel was recruited from army, navy, post office department and civilian organizations throughout the country. The same policy governed all employment—the only test being to give each a job to do and having that job done promptly and efficiently.

In the financing of Western Air Express, Inc., there was no promotion stock issued and no commissions paid on stock sales. Every share sold netted the treasury full value. The original subscribers were actuated by three motives—first, the patriotic duty of in this way helping to strengthen the national defense; second, the sectional responsibility of giving their community the latest advantages in transportation; third, the hope that eventually air commerce might develop sufficiently to return a profit on their investment.

Successful prosecution of these aims dictated the selection of the best available equipment; such as had been tried and proven and in the maintenance of which there existed a definite practice rather than such as would require experimentation.

The thoroughness with which this Los Angeles to Salt Lake City airway was installed is evidenced in the fact that previously to flying the route the entire staff of pilots were sent by automobile for a ground survey of the course. Emergency fields were marked and charted at intervals of ten miles over the entire route and each pilot had first hand knowledge of the ground conditions on each of these fields.

A small but adequate machine shop was erected at the Los Angeles terminal where all the necessary work of maintaining both planes and power plants could be carried out by the operating organization. Meanwhile, a definite sales program had been worked out and conversion of Southern California mailers to use of the air mail

service had started under a plan which contemplated reaching every resident of this section.

As the responsible executive, President Hanshue fixed the policies and passed on the proposed practices throughout his organization. An intelligent economy dictated his decisions. Proposed expenditures were approved only after thorough study of probable alternatives convinced him that the company's funds were being invested to the best advantage. Actual amounts, within reason, concerned him less than the comparative values. A dollar must buy one hundred cents worth of return to avoid waste.

As a result of this careful conservation of resources, Western Air Express, Inc., opened the 600-mile Los Angeles to Salt Lake City operation on April 17, 1926, with a fully equipped, thoroughly efficient organization on an investment of less than \$230,000.

From its first flight, this operation was patently successful. In eighteen months its planes have flown in excess of 700,000 miles with a minimum of delays and no mishaps. Only twice in that period have mail, express or passengers been delayed due to any fault attributable either to the equipment or personnel of Western Air Express, Inc. Forced landings due to mechanical difficulty have occurred on four occasions while weather landings have been a rarity. One pilot, Captain Maurice Graham, has a record of more than 175,000 miles without emergency landing for any reason and without ever arriving behind schedule. The company performance record is figured at 99.86 per cent.

This near-perfection of service has been a considerable factor in building public confidence in air transport over the Western Air Express, Inc., line. The volume of business has steadily increased. For the first six months of 1927, official records show that forty per cent of all transcontinental air mail flew over Western Air Express, Inc. either out of or into Southern California. This represented approximately thirty per cent of all American air mail, and the ratio has been steadily increasing.

A highly efficient operation eliminating the losses incident to mistakes and mishaps has

(Continued on page 712)



Harris M. Hanshue, pres., Western Air Express, Inc.

Capt. Maurice Graham, pilot, with one of the Douglas M-2 planes in use on the Western Air Express' Los Angeles—Salt Lake City airway.

Maj. C. C. Moseley, vice-pres. in charge of operations.



"TEN PLACE AIR YACHT"



BACH AIRCRAFT COMPANY
Clover Field Santa Monica
California

THE BACH AIR YACHT

By FRANK E. SAMUELS

BY invitation of the Bach Aircraft Company and Charles V. Eakin, general manager of the West Coast Air Transport Company, I had the opportunity of making the pathfinder and demonstrating trip in the Bach Air Yacht from Los Angeles to Portland. Although the weather was anything but propitious for a long trip of this kind, fog and rain predominating during the entire run, we were as comfortable in the roomy and luxuriantly furnished cabin as the proverbial bug in a rug.

The party consisted of Waldo Waterman, pilot; Clarence Trout, mechanic; Captain Devaney, chief pilot of the new air line, Lieut. Bob Lloyd, Clover Field, Dana Bennett, representing the Hollywood Chamber of Commerce, Bert Wren, passenger manager of the Pickwick Stage Line, Mr. Eakin and myself.

Leaving Los Angeles we encountered dense fog in crossing the Ridge route of the Sierra Nevada Mountains. Dropping down under it as we entered the San Joaquin Valley, we had nice weather to Fresno, where we ate lunch. Leaving Fresno we had every conceivable kind of weather between there and Corning, Calif., where we made quite a long visit with that wonderful host, Warren N. Woodson, proprietor of the Hotel Maywood, and builder and owner of the Corning Airport, the pioneer airport of the Sacramento Valley. In taking off, Sunday morning, in the mud, we were unfortunate enough to pick up a clod with a stone in it, which struck one of the outside propellers, cracking it. "Always Careful Waterman" sooner than take a chance of crossing the mountains without the motor, set down again at Corning, where we stayed until a prop could be sent us from Los Angeles.

On leaving Corning we had splendid weather over Shasta mountains, covered with snow to their very base. Across the Rogue Country, bad lands, to Medford, Oregon, where we filled our gas tanks. By this time the fog had commenced to settle over the Siskiyou mountains, but as Captain Devaney knew the direct route across them, instead of through Grants Pass, we went above the fog. There was where I learned the feeling of safety that three motors instil, knowing that if the big Pratt and Whitney "Wasp" in the nose

failed, the two little Kinner motors in the wings would fly the ship, and that if two failed, one would give us a gliding angle of fifty to one.

Over the mountains, we came out of the fog over Eugene. Then up the valley, passing Salem, the Capitol of Oregon, where the fog commenced to close in again, until on reaching Portland it was close to the ground. So back we turned for Salem, where there is no landing field, only a short runway alongside of the fair ground race track.

It was raining a deluge. Waterman circled the track a number of times just off the ground and at last picked out a spot that looked solid enough to take a chance on, then slipping the ship in, made a perfect landing.

How to get out of that mud hole was the question that staggered most of us next morning. It was a short muddy runway with a wire fence at the end of it, and Waterman again showed his ability and the maneuverability of the big ship when he held her down to within a few feet of the fence, then, with no apparent effort, pulled the big ship back and hopped the fence.

A thirty-minute flight brought us to Portland, where we landed at Rankin Airport.

PRUDDEN SAN DIEGO AIRPLANE COMPANY

IN 1911 when Mr. George H. Prudden was but a boy in high school he was building gliders and flying them. At the University of Minnesota he majored in architecture. This science, being fundamentally a study of structures, gave him an excellent background for his future creative work in airplane design. It was here that Prudden got his first idea concerning the use of metal fuselages and wings in airplane construction.

In 1920 he became associated with William B. Stout who had just received a contract for the U. S. Navy for the building of three all-metal seaplanes. He served with Mr. Stout as chief of metallurgy and structural design.

Nine months were spent in the laboratory before starting that first navy ship. Each piece of metal was carefully analyzed and tested for tensile strength. The construction was entirely creative because this was the first all-metal airplane built in the United

States. There was no precedent to follow. It was also the first internally braced metal monoplane in America. The ship was turned over to the government in 1922. Experimentally it was a success for it proved that the theory of metal airplane construction was sound, and it gave Prudden valuable data for his future experiences.

Stout then organized the Stout Metal Airplane Company and branched to a purely commercial airplane manufacturing basis in 1923. Prudden went with him as chief engineer.

The first plane they built was a small 35-foot wing spread cabin plane, using a Curtiss OX-5, 90 h.p. engine for power. The plane successfully carried 4 men, the first time that this feat had been accomplished in a plane of such small power. This plane made 90 miles per hour and had a cruising radius of 450 miles. It showed that small all-metal cabin ships could be built cheaply enough to make commercial aviation profitable.

Stout then went to the development of big transport planes capable of carrying 12 to 14 passengers or 2500 lbs. of freight. In these big planes the original design was expanded to accommodate additional carrying capacity. Ten more jobs were turned out before the Stout plant was sold to Henry Ford in 1926. Then Mr. Prudden came to San Diego, and has organized the Prudden-San Diego Airplane Company.

Associated with Mr. Prudden in the Prudden-San Diego Airplane Company, manufacturers of new planes, are B. W. Sinclair, C. O. Richards, H. S. Richards, Colonel Ed. Fletcher, Bradley Tyrell, Phillip Bartlett and B. B. Starke, all of San Diego, California.

AERONAUTICS COURSE IN GALT HIGH SCHOOL

A COURSE in aeronautics is being given at the Galt Joint Union High School, Galt, Calif., under the supervision of William Rutherford, principal. This is believed to be the first aeronautics course in any regular four-year high school.

A model flying field within two hundred yards of the school has been completed, with two runways each over 750 yards in length, properly graded and built to be available at any time of the year. Thirty-two students are enrolled in this work at present.

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(Institute of Aero. Engrs.)
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COLONEL LINDBERGH'S "Spirit of St. Louis" foreshadowed the coming of the five-place Brougham.

The nation wide approval of his plane is again reflected in this latest product of the B. F. Mahoney Aircraft factory, a Brougham, luxurious in its appointments.

For instance, the cabin is completely upholstered in a rich blue velour,

and effectively insulated from engine and propeller noises. Chairs are deep cushioned and comfortable. The two large doors provide easy access to the roomy cabin. Visibility is perfect, with comfort, speed, safety and stamina.

Ownership of a Ryan Brougham assures you of the utmost in a modern airplane. Wright Whirlwind equipped, \$9,700 at San Diego.

The B. F. MAHONEY AIRCRAFT CORPORATION, *San Diego*



Say you saw it in AERO DIGEST



International Photo.

The International F-18 flown by Jeff Warren at Burdett Airport.

CONTACTS

By FRANK E. SAMUELS

DURING my trips around the flying fields, I cannot but notice the unusual amount of business being done and the great number of students in different stages of instruction. Every field and ground flying school in Southern California has a full complement of students, which is unusual at this time of the year as the late fall and early winter have always heretofore caused a considerable dropping off in student instruction.

THE American Aircraft Corporation Airport is one of the most sightly fields in this section. The field has been sown to grass; the runway is kept nicely rolled; and hangars are continually being erected. The Administration Building is a pretty building, with all modern conveniences and the entire plant has a look of efficiency and good management. Waco planes are used exclusively for instruction and are kept busy seven days a week. Fairchild cabin planes are used for passenger carrying and long trips. The aim of the American Aircraft Corporation is to become the leading distributors of airplanes in the United States.

ROGERS Airport, with Jim Webster the able manager at the helm, always has a crowd of visitors, looking over the two big three-motored Ford ships and the new Ryan Brougham. Passenger flying, both short trips and cross-country flights, was never better. Student instruction keeps three pilots busy all the time and motion picture work on the field holds the crowd. A real live field with a live wire managing it.

BURDETT Field has a long list of students, and Fuller and his pilots are kept busy every hour of daylight and sometimes way into the evening. A number of new hangars have been erected and all of them are occupied.

LOS ANGELES Airways Field, with its line up of Eaglerocks and other up-to-date planes, although a new field, is getting its share of student instruction and soloing students as fast as they are competent.

THE Miller Flying Service is keeping Charles Miller busy with pilots who are desirous of brushing up their flying and who are anxious to put in the necessary hours for a transport pilot's license. Between times Charlie manages to take on a limited number of new students, always giving satisfactory results.

AERO CORP. OF CALIFORNIA field, where there is always something new going on, is running night class lectures three evenings a week in a building built expressly for a class room. They give their students a theoretical as well as a practical course of instruction. A new hangar accommodating eight ships is under construction and the field is continually being improved. Lieut. Jack Frye has just ferried a new Universal from the factory in New Jersey, and at this writing Paul Richter, jr., is on his way from the factory with another. It is the intention of the Aero Corporation to start the Los Angeles-Fort Worth passenger and express airline on or about January first, starting with three new Universals.

SHORTS Field is surely doing its share of instruction work. Stanley Short and his pilot instructor are being kept busy daily. Long distance flights in the Bach cabin job and short passenger hops fill in the time allotted man for daylight labor.

DYCKER Airport reports doing a phenomenal student instruction business and they are praying that the bad rain storms hold off until they get their drain ditch finished. Unfortunately the field is so low that in the past when the bad rains came it put them out of business until it drained itself through seepage into the ground.

CAPTAIN C. A. MACKENZIE, one of our old time pilots who is now located and operating the Colton Airport, three miles from San Bernardino and just on the outskirts of Colton, reports business better than he ever dared to hope for. Twenty active students, passenger carrying, both short hops and long distance, and the Eaglerock agency for San Bernardino County, keep him on

the go. Quite a job for a one man field. It is the intention to make a tri-city proposition out of it combining San Bernardino, Colton and Riverside.

FRANK BAKER Airport, one of our new airports, is making good. Frank with his pleasing personality, and Bob Blair with his experience and knowledge of student instruction and cross-country flying, have become very popular in the Culver City territory. Their student body is becoming larger daily. Their Wacos are going almost continuously and they have fitted up a Ryan M2 with the latest motion picture camera mounts, until it is recognized as one of our best planes for motion picture camera work.

WESTERN COLLEGE of Aeronautics, a new ground school, has all the earmarks of eventually being one of the best in this country. The college has a building that any firm might be justly proud of. The officers of the corporation are recognized business men and in fact the general assembly is such as to inspire confidence in prospective students and the general public. The college has the opportunity of becoming a leader in its line. With the men at its head that it has it soon should have a national if not an international reputation.

CAPTAIN WILKINSON of the Universal School of Aeronautics informs me that the night lecture classes have grown so fast that they have been compelled to hold lectures every evening except Saturdays and Sundays. Pilots and student instructors are taking advantage of the lectures to brush up on aerial navigation and the other branches, including meteorology.

THE Romby National Aeronautical School has just announced its new Home Study Ground School Course in aviation. Mr. Berry, president of the school, states that it is their idea to supply the course to the men and young men of the country at a price that is well within their means. He reports that much interest is being displayed in the course, not only in this country, but in Havana, Brazil, Panama, France and England.

HERE is a new one—the Warren School of Aeronautics announces that the engineering class have organized Alpha Chapter of a new engineering Greek letter fraternity, limited exclusively to aeronautical engineering schools and colleges. They have taken Sigma Tau Gamma as the Greek letters of designation and their emblem is the square and triangle together with the aviation wings. The purpose of the organization is to form a bond of friendship between the members of the engineering class who come from all parts of the country and who will be scattered when they take up aeronautical work, and to supply to a certain extent the social life that is missed by a great many of the students.

THE WORLD ON WINGS IS WAITING

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At the WESTERN COLLEGE OF AERONAUTICS, the instructors . . . each a practical, experienced flyer and a recognized authority . . . will give you practical teaching and training in EVERY BRANCH. You will learn both in theory and practice . . . the essential facts that are so necessary to your success. We teach you EVERY branch of AERONAUTICAL science, enabling you to command the highest earnings if you are suited for AVIATION.

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NORTHWEST AIR NEWS

By F. K. HASKELL

WALTER S. JONES, stress engineer at the Boeing Airplane Company plant, Seattle, Wash., has been commissioned an ensign in the United States Navy Aviation Reserve Forces. He has been with the Boeing Company for a number of years.

ANNOUNCEMENT is made of the assignment at Seattle of the National Guard air squadron, whose headquarters will be at the new commercial airport. The enlisted men for this squadron are from the University of Washington air corps students and graduates of the flying training squad at the University.

THOMAS D. STIMSON, chairman of the Seattle-Tokyo flight committee, has suggested that the flight be made by the northern route as it much shorter than via the Hawaiian Islands. The trip by the northern route would be 4,800 miles and the successful contestant would receive the \$25,000 subscribed by Seattle's citizens.

AFTER looking over a number of desirable sites, the aviation committee of the Seattle Chamber of Commerce, and Don Evans, King County engineer, have decided that the Georgetown field is the best.

This field is located close to four transcontinental railroads, on two paved highways, near several electric lines and the Duwamish river. It is also located near the Boeing airplane field.

The purchase price of the field, which has an area of about 425 acres, will be about \$350,000. The size will compare favorably with any field on the Pacific Coast.

THE Colville, Wash., American Legion have formulated plans whereby they will acquire and improve an aviation field of some 30 acres.

THE MacKenzie-Goff Aviation Company has been formed at Portland, Ore., by A. B. (Art) MacKenzie, R. S. Goff and J. L. Morrow for the purpose of dealing in airplanes and accessories. They have acquired the Guild Lake site for a flying base.

NOEL B. EVANS, traffic manager of the Pacific Air Transportation Company, and Don S. Phillips of Portland, Oregon, have been granted pilot's licenses.

LIEUT. E. E. GARBUTT, former patrol flier and well known in Pacific Coast flying circles, is now advocating the development of the Eugene, Ore., municipal airport. He will act as instructor for a flying school, which is being backed by a number of Portland business men.

Shops and hangars will be constructed on the Eugene field, and in addition to the school activities it is announced that a passenger service will be inaugurated early in 1928 to other Oregon cities, and connections made with airlines already established.

Eugene, being the new junction point for the Southern Pacific Railway and the Southern Pacific's Bus Transportation lines, will also be a junction point for many airlines.

UNDER the direction of Verne C. Gorst, president of the Pacific Air Transport company, experiments were made at the commercial airport, Vancouver, Wash., to determine the load capacity of parachutes. A metal tube weighing 20 pounds attached to a parachute with a spread of 10 feet was released from an airplane by Vernon Bookwalter, at an altitude of 1000 feet. The weight landed in one minute and 45 seconds. It drifted about 200 yards from the point of release. A parachute with a spread of 22 feet will land a man safely, and Mr. Gorst believes that eventually parachutes which will safely land crippled airplanes will be built.

THREE Waco-10 biplanes, making up the first of twelve carloads to be received at monthly intervals by the Rankin School of Flying, were delivered at Portland, Ore., and were immediately purchased.

The first of the new planes went to L. E. Eyerly, who will operate from the commercial field at Waldport, Ore.; the second to C. J. Gaul of Portland, who will instruct students and conduct a passenger business there; and the third to Philip Parmeter who plans to enter the flying business at Eugene, Ore.

A fourth plane has been sold to Nick Mamer of Spokane, who has been appointed by Tex Rankin as dealer for Waco planes at the Washington city.

THE British Columbia Airways, Ltd., has been incorporated for the operation of seaplane service between Victoria, Vancouver and Seattle. This service will begin soon with a smaller plane and will be developed as the business warrants.

BEACON lights will be installed every few miles along the government's Boise-Pasco air mail route. The General Electric company is furnishing the lights, which will be located 2 miles west of La Grande, Ore., landing field, 1½ miles southeast of Hot Lake, water tower at North Powder, Coyote peak near Haines, landing field north of Baker, 1 mile west of Quartz near Pleasant valley, one near Durkee and another near Lime.

ANNOUNCEMENT of the fourth aviation school to be established at Portland, Ore., is made by the Mackenzie-Goff Aviation company. Ground school instruction will be handled by the Adcox School of

Aviation with actual flying instruction under Lieut. A. B. Mackenzie, chief pilot of the new organization.

Headquarters of the flying school will be maintained at Guilds Lake, where hangars and offices will be constructed pending the opening of Swan Island airport.

Lieut. Mackenzie is now on his way west, flying an American Eagle biplane from Kansas City. The company has obtained the Oregon-Washington sales franchise for the American Eagle planes and will use them for flying instruction.

THE Heath monoplane is being used by the Light Plane Club, which is an adjunct of the flying training now given at the Hill Academy at Portland, Ore. Six Travel Air biplanes will shortly be put in service by this school.

ASWALLOW biplane was recently exhibited at Portland by the Pacific Air Transport Company at the annual Pacific International Livestock exposition.

IN addition to Tex Rankin and Lieut. Smith, the faculty of the Rankin School of Flying at Portland is composed of Al French, F. W. Anderline, J. D. "Ding" Langdon and Art Walters. The school now has a payroll of \$3,000 a month. Waco planes are used for instruction.

THE OAKLAND AIRPORT IMPROVEMENTS

OAKLAND, just across the bay from "the city by the Golden Gate," is rushing her municipal airport to completion in spite of the fall rains that have begun to bog down all but "Caterpillar" transportation on the field. The Oakland airport is on reclaimed land facing west on San Francisco Bay, so that it may be used by hydroplanes as well as airplanes. Hence, the minute the rains began in October much of the land became boggy. Getting material onto the field for construction and drainage was a problem. When the motor trucks quit under the weight of 3-4 ton sections of concrete drain pipe, the "Caterpillar" Sixty was purchased by the Board of Harbor Commissioners to drag the pipe on out to the end of the drainage line where they could be laid to complete the job.



Concrete drainage pipe being hauled by Caterpillar tractor at Oakland Airport.

"Above All!"



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Made of silk or cotton.

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(Continued from page 704)

made for an exceptionally low per mile cost considering the type of equipment necessary for the business done. An effective method of business production has brought gross income to the highest per mile return ever earned by a similar operation.

"Make the income bigger than the outgo"—that is Harris M. Hanshue's business formula; and Western Air Express, Inc. is paying dividends.

Mr. Hanshue was drafted from the ranks of successful business executives to head and organize this first economically successful venture in air transport.

A graduate engineer from the University of Michigan, he left that institution in 1901 to identify himself with the then infant automobile industry. Soon after, he went out to Southern California, where he pioneered in the automobile distributing service.

Twenty years ago, automobile racing with stock cars was the most effective method of popularizing motor vehicles. To have a winning car was an essential factor in building sales volume; and "Harry" Hanshue will be remembered as having frequently driven a winner. This phase of sales promotion passed and found Harris M. Hanshue first a successful sales manager and subsequently a leading Pacific Coast distributor on his own account.

It has been said of him that he is the only man to keep an agency alive and profitable over a period of years while his factory was declining rapidly into insolvency. This was the background from which he was taken to put air transportation on a profitable basis.

LEGION OF HONOR FOR COL. JEFFERSON DAVIS

BRIGADIER GENERAL Georges A. L. Dumont, military attaché of the French embassy in Washington, recently conferred the Cross of the Legion of Honor upon Colonel Jefferson Davis of San Diego, California, in recognition of his services in the cause of aviation.

Colonel Davis was legal advisor to the military attaché at the embassy in Berlin during the war and is recognized as one of the leading authorities on aeronautical laws. He recently flew over 20,000 miles over Europe.

BELL LINE SELLING EAGLEROCK PLANES

THE Bell Line Air Service, Inc., Portland, Oregon, have become Eaglerock distributors in Eastern Oregon and will act as dealers under J. Barton Story in the western part of the state.

The Bell Line Company have been operating one of the largest bus lines between Portland and San Francisco for some years. In the new company, A. T. Shere is president, while Jack Parshall, well known pilot, will act as sales manager.

The Bell Line is very well equipped to merchandise the Eaglerock, due to their organization and past experience in handling transportation service, advertising and sales.

STORY FLYING SCHOOL

THE Story Eaglerock Sales Company of Tacoma, Washington, distributors of Alexander products in Western Washington, have recently opened a school of practical flying. The course includes theory of flight, motor repair, aerial photography, business administration, aerodynamics, and six hundred minutes of flying instruction.

C. L. Landdon, winner of the San Francisco-Spokane Air Derby, is chief pilot and flying instructor with Virgil Adair as his assistant. N. C. Atkins is in charge of the repair shop with Orraine Martin as his assistant. J. B. Story is business manager; Mrs. Story, secretary.

The school is located at the Mueller-Harbins Airport, just seven miles from the business district of Tacoma.

HOWARD E. PATTERSON

HOWARD E. PATTERSON'S death from heart failure on October 30th was a great blow to the aviation industry of the southwest as well as to his many friends scattered throughout the country. "Pat", as he was known to his intimates, was considered one of the most skilled pilots in the business. He learned to fly in 1915 at the old Venice Field and later spent a year in the Orient on an airplane demonstration tour. Since the war and up to a year ago, when he suffered a paralytic stroke, he was continuously engaged in commercial flying.

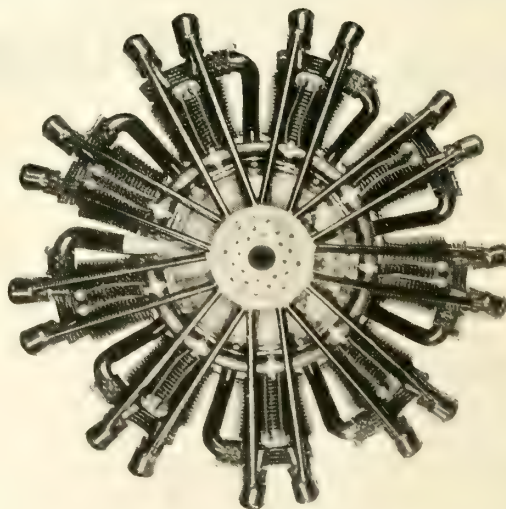
As first secretary and second president of the Professional Pilots' Association, Pat was a loyal worker for the cause of aviation.

HERE IS THE MOTOR YOU HAVE BEEN WAITING FOR ... AND AT A PRICE YOU CAN AFFORD TO PAY

There is a wealth of motor and a wealth of power in this engineering triumph of today. The Salmson has been converted into one of the finest motors on today's market, embodying all the features of acknowledged motor leadership.

Investigate and write for particulars.

Air or Water Cooled.



These changes were made after extensive research and experiment on the part of our organization. Every change has been thoroughly tested until we know that we are offering a reliable, dependable, excellently performing engine at a price you can afford to pay.

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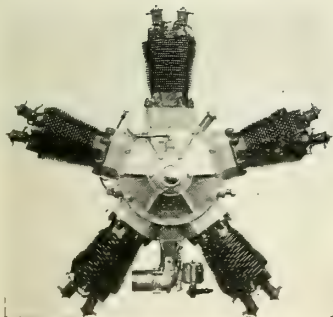
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Economy and Light Weight
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ACTUAL flying tests have proved that the Kinner 100 horsepower, five cylinder motor, weighing only 257½ pounds, will maintain a speed of 100 miles per hour in an average light commercial ship with a gasoline consumption per hour of 6.6 gallons.

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NEWS OF THE AIR SERVICES

"CORSAIR" SEAPLANE PASSES NAVY TESTS

THE first Corsair to come off the production line at the Chance Vought Corporation plant in Long Island City, New York, was delivered to the Naval Air Station at Rockaway, N. Y., last month and was put through the trials and tests required by the Navy Department. It was flown by Lieut. John W. Iseman, U. S. N., Commanding Officer of the Air Station and by Lieut. Louis A. Haase, U. S. N., Naval Inspector at the Chance Vought factory. The plane easily surpassed all test requirements. The Corsair's remarkable flying characteristics were well demonstrated and the new plane showed an even better performance than the first experimental ships. It repeatedly took off in five seconds, a record for a fully loaded service seaplane.

These flight tests showed the production type Corsairs to have characteristics even superior to the original planes of this type, one of which, within a short period, established four world seaplane records without special grooming and after being in active test service for over six months. These records had been previously held by France and Italy with specially prepared planes, and were beaten by wide margins by the Vought plane. The Corsair's record breaking performances are all the more striking as a stock plane and engine was used without supercharging.

According to official records, the Corsair's performance at service altitudes exceeds that of service type single-place pursuit planes of the Army and Navy. To quote a high ranking naval officer, "Its official performance as a two-seater with 500 pounds more useful

load than the single-seaters, shows only a half dozen miles of inferior high speed at sea-level, whereas in point of climb, ceiling, maneuverability and altitude performance including speed at altitude, it is superior to the single-seaters."

The Corsair is one of the world's most versatile airplanes. It includes many novel military ideas, including the location of machine guns remote from the cockpit so arranged that bullets do not fire through the propeller blades. Interchangeable landing gear of either the land or water type may be fitted to the Corsair, and later it is to be supplied with amphibian type gear. Arresting gear is provided for landing on the decks of the new aircraft carriers *U. S. S. Saratoga* and *Lexington*, and it may be catapulted from the battleships and cruisers. Radio is provided for observation purposes, and being extremely maneuverable and possessing remarkable performance, with its armament, the Corsair is deemed well able to take care of itself in its naval assignments. Due to the inherent efficiency of the plane and the Pratt and Whitney Wasp engine installation around which the Corsair was designed, the plane is also an excellent high-speed cross-country type.

The Chance-Vought Corporation, builders of the Corsair, is one of the oldest and largest manufacturers of aircraft in the country. A large quantity of these planes are being built for use throughout the U. S. Naval and Marine Corps Air Services.

Mr. Chance Vought, the head of the company, is one of the country's oldest fliers, being a protégé of the Wright Brothers. He learned to fly on one of the original Wright planes seventeen years ago and has been active in the industry continuously since then.

NAVY AWARDS LARGE ENGINE CONTRACTS

THE Navy has awarded a contract to the Pratt & Whitney Aircraft Company, Hartford, Conn., for 346 "Wasp" nine-cylinder 440 horsepower air-cooled engines, at a total cost of \$3,147,323.31. These engines will be used in the planes now under construction, and the planes which will be ordered to complete the aviation building program for the year. They will be used also to replace the engines in planes now in use. The "Wasp" engine is used in observation planes (O2U), Boeing fighters (F3B), and the Curtiss shipboard fighters (F7C).

An order has been placed with the Wright Aeronautical Corporation of Paterson, N. J., for 156 Wright Model J-5A air-cooled 200 h.p. aircraft engines and spares at a total cost of \$887,923.15. These engines will be used in observation planes and for training planes now on hand and on order.

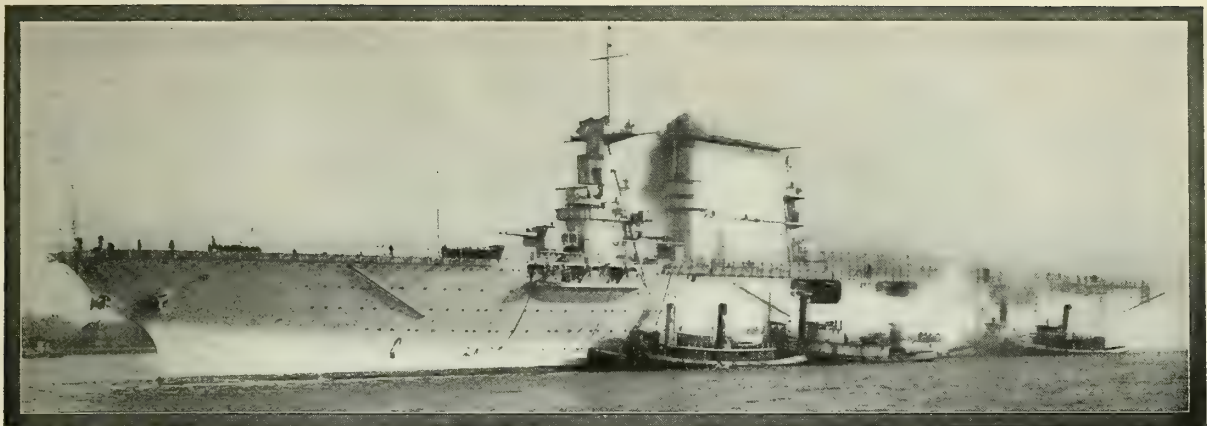
AIR CORPS ORDERS 25 KEYSTONE BOMBERS

ORDERS for the first production of bombardment planes designed for the re-equipment of the bombardment units of the Army Air Corps, and based upon the results of extensive tests of this type of airplane, have been awarded by the War Department in the form of a contract to the Keystone Aircraft Company at Bristol, Pa., for 25 LB-5A airplanes.

These bombardment planes are to be assigned to the bombardment group at Langley Field, Norfolk, Va., and will release from Langley Field planes now in use there and which are in turn scheduled for allocation to Kelly Field, Texas.



Three Army Air Corps veterans who were assigned to aviation duties when the first army plane was purchased and who are now holding executive posts in the Army Air Corps—Colonel B. D. Foulois, Major H. H. Arnold, and Major T. D. Milling.



Acme.

THE AIRPLANE CARRIER "SARATOGA"

THE airplane carrier *Saratoga*, the Navy's largest vessel, was commissioned into service on November 16. With a brief ceremony, the 33,000-ton vessel was turned over to the Navy Department by her builders, the American Brown-Boveri Company, at the South Camden, N. J., Ship Yards.

Five hundred guests attended the ceremony. Rear Admiral Julian L. Latimer, Commandant of the Fourth Naval District, accepted the ship for the Navy, and Captain Harry E. Yarnell was commissioned commanding officer of the *Saratoga*.

In about three months, after a "shake down cruise," the *Saratoga* will join the Pacific fleet as flagship of the aircraft squadron.

The vessel was originally one of the six battle cruisers included in the three-year building program authorized in August 1916. The original contract for her hull and machinery was signed May, 1917, but work on the *Saratoga* was not commenced until 1920. The original plans for her construction were modified after the war to incorporate in them changes which experience during the war showed were needed in capital ship construction. The *Saratoga's* keel was laid on September 25, 1920, and the ship was about one-third completed at the time of the Limitation of Armament Conference. In accordance with the terms of the Limitation of Armament treaty, the *Saratoga's* plans were again changed and she was converted into an airplane carrier.

A supplementary contract for the conversion of the *Saratoga* was signed in October 30, 1922, and work on her was recommended. While the part of the vessel below the water line was retained as far as practicable the same for the airplane carrier as for the battle cruiser, with improved protection against underwater attack, the deck arrangement was changed to give the greatest amount of space to a flying deck.

The *Saratoga* was launched on April 7, 1925, and christened by Mrs. Curtis D. Wilbur, wife of the secretary of the Navy.

Description of the Saratoga

The *Saratoga* is 850 feet long between perpendiculars and 888 feet long overall. The maximum beam at the flying deck is 106 feet. Displacement about 33,000 tons; maxi-

mum draft about 30 feet. She is equipped with engines of 180,000 horsepower, built by the General Electric Company of Schenectady, New York.

A long flying deck extends over the entire top of the ship from stem to stern and will be free from all obstructions with the exception of an "island" on the starboard side, where in a massive combined funnel enclosure, the masts, uptakes, turrets and superstructure are located.

To make up for the preponderance of weight on the starboard side quantities of oil, gas and water will be carried on the port side of the vessel. When gas and oil are consumed in large quantities, water ballast can be substituted in their place.

This flying deck will accommodate at one time a large part of the ship's complement of set-up airplanes and still leave sufficient room for a take-off. Near the bow is a newly adopted device for launching seaplanes.

Elevators are so constructed as to come flush with the flying deck, making an unbroken flying surface about 900 feet long. The elevators are capable of hoisting the largest type naval plane. An arresting gear is set on the flying deck to stop landing airplanes within a distance of several hundred feet. This equipment has been installed to prevent the possibility of any mishap in landing during a rough sea.

The interior of the *Saratoga* is quite different from the space below decks on other naval vessels. There are storage places for flying machines as well as cranes and elevators with which to hoist them up from below preparatory to hopping off from the flying deck.

The crew's quarters are on the deck beneath the flying deck and the hangar deck is below that, thus receiving the protection of two upper decks from explosives that might drop on the ship by enemy airplanes. Forward of the hangar deck there are eight decks from the hold to the flying deck.

There are fully equipped aircraft machine shops and carpenter shops on board, a laboratory for testing engines, and shops for fabric work, doping and painting. There is a sheet metal shop, a plumbing shop and sewing shop with more than 40 sewing machines.

The interior is divided into more than 600 compartments. Of these 600 compartments, 117 are assigned to the Supply Department of the vessel, and 31 are set aside for the storage of technical aviation material, 70 are assigned for the storage of general ship's stores, equipage and provisions, and 16 are utilized for the galley, bakery, butcher shop, general mess issue room, clothing issue room and the ship's store or "canteen."

The radio equipment will include all the latest facilities for sending and receiving messages. The main transmitter will be the most powerful of any vessel in the Navy except the *Lexington*, which will be similarly equipped. The *Saratoga* and *Lexington*, being plane carriers, will be used for scouting duty and therefore long distance radio communication with the commander-in-chief will be essential.

Radio compasses will be provided for navigational purposes and for obtaining bearings of planes on scouting duty in order to guide their return to the carrier.

Each of the 600 separate compartments on board is supplied with a loud speaker so that from any one of several central stations about the ship any officer or man may be immediately reached.

The ship's armament in addition to about 85 airplanes which she carries, consists of eight 8-inch 50 caliber long range rifles and twelve 25 caliber anti-aircraft guns capable of warding off destroyer as well as enemy aircraft attacks. These latter guns are nested in groups of three at strategic points.

The *Saratoga* will be propelled by electric machinery developing 180,000 horsepower which is greater than the combined output of the six electric drive capital ships now in commission, the New Mexico, California, Tennessee, Maryland, Colorado, and West Virginia.

Her speed will be more than 33 knots or about 38 miles an hour. The propulsion apparatus which was designed by the engineers of the General Electric Company, would supply the electric demands of Philadelphia. The machinery comprises four 35,200 kilowatt turbine generator sets which supply current to eight powerful motors,

(Continued on page 718)

ARMY AND NAVY AIR SERVICE ORDERS

ARMY AIR CORPS ORDERS

THE following Army Air Corps orders have been issued as of the dates indicated in brackets:

Acheson, George Robert, Civilian, to Third Attack Group, Fort Crockett, Tex. (Oct. 22)

Adams, John Quincy, Civilian, to March Field, Riverside, Calif. (Oct. 22)

Adler, Capt. Elmer E., to duty in office of Chief of Air Corps, Washington, D. C., upon completion of tour of foreign service. (Nov. 7)

Angell, Sergt. Henry Rosser, from Technical School detachment, Langley Field, Va., to Bolling Field, D. C. (Oct. 22)

Armstrong, Major Francis T., Field Artillery, to duty involving flying for purpose of study and operation of tactical maneuvers, etc., at Langley Field, Va. (Nov. 4)

Arneam, Major George E., Field Artillery, to duty involving flying for purpose of study and operation of tactical maneuvers, etc., at Langley Field, Va. (Nov. 4)

Ashton, 2d Lt. Francis Edward, Reserve, order of Sept. 2 revoked. (Oct. 22)

Bathurst, Capt. Robert M., Field Artillery, to duty involving flying for purpose of acting as observer in connection with demonstrations in aerial observation at Field Artillery School, Fort Sill, Okla. (Oct. 22)

Berner, Donald Wright, Civilian, to Third Attack Group, Fort Crockett, Tex. (Oct. 22)

Bissell, Harry Prime, Civilian, to Mitchell Field, L. I., N. Y. (Oct. 22)

Blatt, Capt. Raymond C., Cavalry, to duty involving flying for purpose of study and operation of tactical maneuvers, etc., at Langley Field, Va. (Nov. 4)

Blufuss, William Barwig, Civilian, to Langley Field, Va. (Oct. 22)

Bradshaw, Warrant Officer Leland D., report to commanding officer, Kelly Field, Tex., to take special observation course at Advanced Flying School; return to Langley Field, Va., upon completion of course. (Nov. 5)

Breene, 1st Lt. Robert G., promoted to rank of captain. (Nov. 15)

Brown, 1st Lt. George H., to Marshall Field, Fort Riley, Kansas, upon completion of tour of foreign service. (Nov. 8)

Brown, Harold Frederick, Civilian, to Crissy Field, Presidio of San Francisco, Calif. (Oct. 22)

Burhardt, 2d Lt. John Philip, Reserve, on duty at Primary Flying School, Brooks Field, Tex.; proceed home and relieved from further active duty. (Nov. 5)

Burnside, 2d Lt. Marvin M., Coast Artillery Corps, from 6th Coast Artillery, Fort Winfield Scott, Calif.; to Primary Flying School, Brooks Field, Tex. (Oct. 18)

Cannon, 1st Lt. John K., to Selfridge Field, Mich., upon completion of tour of foreign service. (Nov. 8)

Cannon, 2d Lt. Robert M., relieved from detail in Air Corps with 2nd Div., Fort Sam Houston, Tex.; to 3rd Field Artillery, Fort Sheridan, Ill. (Nov. 10)

Chester, Capt. Einar W., from 2nd Infantry, Fort Sheridan, Ill.; to Primary Flying School, Brooks Field, Tex. (Oct. 18)

Craig, 1st Lt. Howard A., to office of Chief of Air Corps, Washington, D. C., upon completion of tour of foreign service. (Nov. 8)

Culbertson, 2d Lt. Raymond E., promoted to rank of 1st lieutenant. (Oct. 18)

Cunningham, Major Charles H., Corps of Engineers, to duty involving flying for purpose of study and operation of tactical maneuvers, etc., at Langley Field, Va. (Nov. 4)

Davidson, 1st Lt. John L., to Fort Crockett, Tex., upon completion of tour of foreign service. (Nov. 7)

Dean, 2d Lt. William E., jr., relieved from detail in Air Corps with 2nd Div.; to Field Artillery of 2nd Div., Fort Sam Houston, Tex. (Nov. 4)

Desrosiers, 2d Lt. Leo W., order of Oct. 24 to Maxwell Field, Ala., amended to Third Attack Group, Fort Crockett, Tex. (Nov. 8)

Douthitt, Lawrence Henry, Civilian, to Fort Sam Houston, Tex. (Oct. 22)

Duffy, 2d Lt. Martin William, order of Sept. 2 revoked. (Oct. 18)

Eaton, 1st Lt. Samuel C., jr., to Chanute Field, Ill., upon completion of present tour of foreign service. (Oct. 22)

Ellison, James Arthur, Civilian, to Selfridge Field, Mich. (Oct. 22)

Elmendorf, Capt. Hugh M., order of Nov. 10 relieving him from assignment at Selfridge Field, Mich., etc., revoked. (Nov. 15)

Evans, 1st Lt. Frederick W., to Mitchell Field, N. Y., upon completion of tour of foreign service. (Nov. 10)

Fair, Ford Larimore, Civilian, to Aberdeen Proving Ground, Aberdeen, Md. (Oct. 22)

Fechet, Brig. Gen. James E., Asst. Chief of Air Corps, detailed as member of board appointed to recommend individuals who should be awarded decorations, etc. (Oct. 21)

Felt, 2d Lt. Howard M., promoted to rank of 1st lieutenant. (Nov. 15)

Finter, Capt. Clyde V., to Wright Field, Ohio, upon completion of tour of foreign service. (Nov. 8)

Flatequal, Harry John, Civilian, to Bolling Field, D. C. (Oct. 22)

Frese, 2d Lt. Henry August, Reserve, relieved from Maxwell Field, Ala., to proceed to his home and revert to inactive status. (Nov. 5)

Gates, Lt. Byron E., to Mitchell Field, N. Y. (Nov. 8)

Geer, George Richard, Civilian, to Langley Field, Va. (Oct. 22)

George, Flying Cadet Otto Clyde, from 90th Attack Sqdn., Fort Crockett, Tex.; to Third Attack Group, Fort Crockett, Tex. (Oct. 22)

Givens, 1st Lt. James D., to Langley Field, Va., upon completion of tour of foreign service. (Nov. 7)

Grizzard, 2d Lt. Harry M., relieved from assignment to 9th Infantry, Fort Sam Houston, Tex.; to Primary Flying School, Brooks Field, Tex. (Nov. 2)

Gross, Flying Cadet Walter William, from 69th Service Sqdn., Fort Crockett, Tex.; to Third Attack Group, Fort Crockett, Tex. (Oct. 22)

Harmon, Major Millard F., jr., designated as commandant of Primary Flying School, March Field, Riverside, Calif. (Nov. 8)

Heald, 1st Lt. Robert S., to Chanute Field, Ill., upon completion of tour of foreign service. (Nov. 7)

Hebbard, 1st Lt. Albert F., retired from active service. (Oct. 31)

Hodges, 1st Lt. James P., to Maxwell Field, Ala. (Nov. 8)

Hopkins, Joseph Gerard, Civilian, to Selfridge Field, Mich. (Oct. 22)

Hopkins, Capt. Hubert V., to Wright Field, Ohio, upon completion of tour of foreign service. (Nov. 10)

Hunter, Capt. Frank O., member of board appointed to recommend individuals who should be awarded decorations, etc., authorized by Act of Congress. (Nov. 14)

Jones, Major Harrison Morton, Reserve, from active duty to inactive status. (Nov. 3)

Jones, Flying Cadet John N., from 7th Observation Sqdn., France Field, Canal Zone; to Panama Canal Dept. (Oct. 22)

Karrick, Capt. Samuel N., Corps of Engineers, from 2nd Engineers, Fort Logan, Colo.; to Primary Flying School, Brooks Field, Tex. (Oct. 18)

Kessler, 1st Lt. Alfred A., jr., from Brooks Field, San Antonio, Tex.; report to commanding officer, San Antonio Air Depot. (Nov. 5)

Knight, Capt. Louis R., from Chanute Field, Rantoul, Ill., to Brooks Field, San Antonio, Tex. (Nov. 15)

Lampton, 2d Lt. Glen T., promoted to rank of 1st lieutenant. (Nov. 15)

Lyle, Capt. Donald, Reserve, to active duty; report to procurement planning representative, Chicago, Ill. (Nov. 3)

MacDonald, 1st Lt. Russell C., to Maxwell Field, Montgomery, Ala., upon completion of tour of foreign service. (Nov. 5)

Macnair, George Henry, Civilian, to Third Attack Group, Fort Crockett, Tex. (Oct. 22)

McBlain, 1st Lt. John F., to Fort Crockett, Tex., upon completion of tour of foreign service. (Nov. 8)

McGinnis, 1st Lt. Harold A., to Bolling Field, D. C., upon completion of tour of foreign service. (Nov. 8)

McGregor, 1st Lt. Kenneth C., to Middleton Air Depot, Middletown, Pa., upon completion of tour of foreign service. (Nov. 10)

McReynolds, 1st Lt. Edwin R., from Langley Field, Hampton, Va.; assigned as Air Corps representative at Keystone Aircraft Corp., Bristol, Pa. (Nov. 10)

Merrick, 1st Lt. Louis M., to Bolling Field, D. C., upon completion of tour of foreign service. (Nov. 10)

Messmore, Waldine Winston, Civilian, to Third Attack Group, Fort Crockett, Tex. (Oct. 22)

Miller, 1st Lt. Leland W., relieved from assignment at Maxwell Field, Ala.; report for duty in office of Chief of Air Corps. (Nov. 4)

Miller, Capt. Lester T., to Scott Field, Ill., upon completion of tour of foreign service. (Nov. 8)

Moore, 1st Lt. Arthur I., relieved from detail in Air Corps with 2nd Div., Fort Sam Houston, Tex.; to 25th Infantry, Douglas, Ariz. (Nov. 3)

Moore, 1st Lt. John I., promoted to rank of captain. (Oct. 18)

Neville, Forrest Lynne, Civilian, to Fort Sam Houston, Tex. (Oct. 22)

Newstrom, Herbert Melvin, Civilian, to Third Attack Group, Fort Crockett, Tex. (Oct. 22)

O'Connell, 1st Lt. Jack J., to Fort Crockett, Tex., upon completion of tour of foreign service. (Nov. 8)

Overacker, Charles Bernard, Jr., Civilian, to Mitchell Field, L. I., N. Y. (Oct. 22)

Palmer, Ivan Maurice, Civilian, to Third Attack Group, Fort Crockett, Tex. (Oct. 22)

Park, Flying Cadet Frank Keith, from 7th Observation Squadron, France Field, Canal Zone; to Panama Canal Dept. (Oct. 22)

Phelan, 2d Lt. William J., from Primary Flying School, Brooks Field, Tex.; to 28th Infantry, Fort Ontario, N. Y., upon completion of observation and treatment at Walter Reed General Hospital, Washington, D. C. (Nov. 2)

Phillips, Capt. Thomas R., Coast Artillery Corps, to duty involving flying for purpose of study and operation of tactical maneuvers, etc., at Langley Field, Va. (Nov. 4)

Prindle, Hoyt Leroy, Civilian, to Selfridge Field, Mich. (Oct. 22)

Robinson, Frank Hamlet, Civilian, to Selfridge Field, Mich. (Oct. 22)

Roscoe, Keith, Civilian, to Selfridge Field, Mich. (Oct. 22)

Saville, Gordon Philip, Civilian, to Mitchell Field, L. I., N. Y. (Oct. 22)

Sibert, 1st Lt. Edwin L., to duty involving flying for purpose of acting as observer in connection with demonstrations in aerial observation at Field Artillery School, Fort Sill, Okla. (Nov. 4)

Skemp, 1st Lt. Samuel C., promoted to rank of captain. (Nov. 15)

Smith, 2d Lt. Joseph, Cavalry, relieved from 2d Machine Gun Squadron, Fort Bliss, Tex.; to Primary Flying School, Brooks Field, Tex. (Nov. 8)

Snively, 2d Lt. Ralph A., promoted to rank of 1st lieutenant. (Nov. 15)

Springer, Allen Ralph, Civilian, to Edgewood Arsenal, Edgewood, Md. (Oct. 22)

Stace, 1st Lt. Donald F., to Wright Field, Ohio, upon completion of tour of foreign service. (Nov. 8)

Tefft, Flying Cadet Gilbert Lorenzo, from 23rd Bombing Sqdn., Luke Field, Hawaii; to Hawaiian Dept. (Oct. 22)

Tinker, Major Clarence L., relieved from assignment in office of Chief of Air Corps; report for duty to commanding officer, Kelly Field, Tex.; designated as asst. commandant, Advanced Flying School. (Nov. 10)

Tyndall, 1st Lt. Frank B., from Keystone Aircraft Factory, Bristol, Pa.; report for duty to commanding officer, Langley Field, Hampton, Va. (Nov. 10)

Walsh, James Franklin, Civilian, to Langley Field, Va. (Oct. 22)

Ward, 1st Lt. Charles S., relieved from assignment to 8th Engineers, Fort Bliss, Tex.; to Primary Flying School, Brooks Field, Tex. (Nov. 2)

Wash, Major Carlyle H., designated as commandant of Primary Flying School, March Field, Riverside, Calif. (Nov. 8)

Wheaton, Flying Cadet Harold Arthur, from 2nd Bombing Group, Langley Field, Va.; to Langley Field, Va. (Oct. 22)

Williams, 1st Lt. Randolph P., Signal Corps; transferred to Air Corps. (Nov. 8)

Wolfe, Franklin Calhoun, Civilian, to Mitchell Field, L. I., N. Y. (Oct. 22)

Woolard, Herman Franklin, Civilian, to Maxwell Field, Montgomery, Ala. (Oct. 22)

Wood, 1st Lt. Myron R., to Mitchell Field, L. I., N. Y., upon completion of tour of foreign service. (Oct. 21)

Woodruff, Staff Sergt. Paul Leamon, from 91st Observation Sqdn., Crissy Field, Calif.; to March Field, Riverside, Calif. (Oct. 22)

Wriston, 1st Lt. Roscoe C., relieved from assignment at Kelly Field, Tex.; to duty at Maxwell Field, Montgomery, Ala. (Nov. 4)

NAVY AIR SERVICE ORDERS

THE following Navy air orders have been issued as of the dates indicated in brackets:

Ackiss, Comdr. Ernest L. (C.H.C.) det. Bu. Nav.; to U. S. S. *Saratoga*. (Nov. 12)

Adair, Lt. (j.g.) Crutchfield, det. Airc. Sqdns., Battle Flt.; to Asiatic Sta. (Oct. 21)

Barnaby, Lt. Ralph S. (C.C.), det. Bu. Aero.; to assist, insp., Nav. Airc. Central Dist., Wright Field, Dayton, O. (Nov. 12)

Bear, Lt. (j.g.) Newman K. (M.C.), det. N. A. S., Lakehurst, N. J.; to Airc. Sqdns., Battle Flt. (Nov. 8)

Bogan, Lt. Comdr. Gerald F., to VF Sqdn. 1B, Airc. Sqdns., Battle Flt.; orders Sept. 29, 1927, revoked. (Oct. 26)

Bogusch, Lt. Comdr. Harry R., orders Aug. 23, 1927, revoked; to continue duty N. A. S., San Diego, Calif. (Oct. 26)

Botta, Lt. Rico, det. U. S. S. *Langley*; to N. A. S., Pensacola, Fla. (Nov. 18)

Bushnell, Ens. Wilfred, det. U. S. S. *Denver*; to U. S. S. *Lexington*. (Oct. 29)

Campman, Lt. Comdr. John H., orders Sept. 26, 1927, to C. O. VF Sqdn. 1B, Airc. Sqdns., Battle Flt., revoked; to continue C. O. Nav. Air Sta., Sand Point, Seattle, Wash. (Oct. 26)

Comp. Lt. (j.g.) Charles O., to duty U. S. S. *Saratoga*. (Nov. 15)

Curtin, Lt. Lawrence W., det. U. S. S. *Florida*; to VO Sqdn. 5S, Airc. Sqdns., Scgt. Flt. (Nov. 10)

Dickinson, Lt. Comdr. Spencer E. (S. C.), det. U. S. S. *Wright*; to N. A. S., Lakehurst, N. J. (Nov. 7)

Duncan, Lt. Comdr. Donald B., det. Airc. Sqdns., Battle Flt.; to command VO Sqdn. 2B (U. S. S. *New Mexico*), Airc. Sqdns., Battle Flt. (Nov. 15)

Erickson, Lt. Comdr. Oscar W., to duty involving flying command VJ Sqdn. 1B, Airc. Sqdns., Battle Flt. (Nov. 9)

Gaines, Lt. Oliver W., det. Off. in Chg., Navy R. S. Sta., Louisville, Ky.; to c.f.o. (Nov. 9)

Gehres, Lt. Leslie E., det. N. A. S., Pensacola, Fla.; to duty with VT Sqdn. 9S, Airc. Sqdns., Scgt. Flt. (Nov. 15)

(Continued on page 718)



The distance of a Trans-Pacific hop is daily flown by "Wasp" engines with the Transcontinental Air Mail

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NAVY AIR SERVICE ORDERS

(Continued from page 716)

Gellery, Lt. Daniel V., jr., det. N. A. S., Pensacola, Fla.; to duty with VT Sqn. 88, Airc. Sqdns., Sctg. Flt. (Nov. 15)

Goldthwaite, Lt. (j.g.) Robert, det. VT Sqn. 2B, Airc. Sqdns., Battle Flt.; to U. S. S. Colorado. (Nov. 10)

Handly, Lt. (j.g.) Albert, det. N. A. S., Pensacola, Fla.; to VT Sqn. 9S, Airc. Sqdns., Sctg. Flt. (Nov. 15)

Harper, Lt. Carl B. (C.C.), det. Nav. Airc. Factory, Navy Yard, Phila., Pa.; to Bn. Aero. (Nov. 12)

Harper, Lt. Cecil F., ors. Oct. 14, 1927, modified; to duty involving flying with VO Sqn. 2B. (Nov. 1)

Harris, Lt. (j.g.) Dale, det. VO Sqn. 5S (U. S. S. Arkansas), Airc. Sqdns., Sctg. Flt. (Nov. 10)

Harvey, Lt. Andrew M., det. Navy Yard, Phila., Pa.; to c.f.o. U. S. S. Saratoga; ors. Oct. 19, 1927, to Edgewood, Md., revoked. (Oct. 27)

Herdond, Lt. Comdr. Linton, det. U. S. S. Altair; to U. S. S. Langley. (Oct. 27)

Hollingsworth, Ens. William R., det. Div. Flt. Trng.; to c.f.o. U. S. S. Lexington. (Oct. 26)

Hundt, Lt. Lester T., det. VO Sqn. 5S (U. S. S. Nevada), Airc. Sqdns., Sctg. Flt.; to continue duty VO Sqn. 5S. (Nov. 10)

Jordan, Lt. Comdr. Lewis G. (M.C.), det. Nav. Trng. Sta., Hampton Rds., Va.; to U. S. S. Lexington. (Nov. 1)

Kirkland, Lt. (j.g.) Thomas J., jr., det. VO Sqn. 5S (U. S. S. Wyoming); to continue duty VO Sqn. 5S, Airc. Sqdns., Sctg. Flt. (Nov. 10)

McComb, Lt. James M. (S.C.), det. Nav. Sup. Depot, Hampton Rds., Va.; to VT Sqn. 2S, Airc. Sqdns., Sctg. Flt. (Oct. 26)

Mead, Lt. (j.g.) Alfred R., det. Airc. Sqdns., Sctg. Flt.; to aide and flag sec'y and flag lieutenant on staff. (Nov. 8)

Michaux, Lt. (j.g.) Woodson V., det. U. S. S. Scorpion; to c.f.o. U. S. S. Lexington. Orders Oct. 8, 1927, to U. S. S. Toucey, revoked. (Oct. 28)

Moss, Lt. (j.g.) Richard S., det. VT Sqn. 2B, Airc. Sqdns., Battle Flt.; to VT Sqn. 5A, Asiatic Flt. (Oct. 26)

Mowatt, Ens. Warren P., det. N. A. S., Pensacola, Fla.; to U. S. S. Preston. (Oct. 31)

Mulheron, Lt. (j.g.) Edward S., det. N. A. S., Pensacola, Fla.; to VT Sqn. 9S, Airc. Sqdns., Sctg. Flt. (Nov. 15)

Oexle, Lt. (j.g.) Charles W., det. N. A. S., Pensacola, Fla.; to VT Sqn. 9S, Airc. Sqdns., Sctg. Flt. (Nov. 15)

Perkins, Lt. (j.g.) Albert N., det. N. A. S., Pensacola, Fla.; to VT Sqn. 9S, Airc. Sqdns., Sctg. Flt. (Nov. 15)

Pitre, Lt. Antonio S. (C.C.), det. Bethlehem Shipbldg. Corp., Quincy, Mass.; to U. S. S. Lexington. (Oct. 21)

Potts, Ens. William H., det. Naval Academy; to c.f.o. U. S. S. Lexington. (Nov. 7)

Powers, Lt. Comdr. Frederick D., det. U. S. S. Langley; to U. S. S. Rigel. (Oct. 27)

Rainer, Ens. Gordon B., det. U. S. S. Denver; to c.f.o. U. S. S. Saratoga. (Oct. 21)

Ranschousen, Lt. Rogers S., det. VO Sqn. 5S (U. S. S. Florida); to continue duty VO Sqn. 5S, Airc. Sqdns., Sctg. Flt. (Nov. 10)

Rhodes, Lt. Braxton, det. N. A. S., Pensacola, Fla.; to c.f.o. U. S. S. Lexington. (Nov. 8)

Scott, Ens. John M., to duty c.f.o. U. S. S. Lexington. (Nov. 14)

Smith, Lt. Clyde W., det. N. A. S., Coco Solo, C. Z.; to N. A. S., Hampton Rds., Va. (Nov. 19)

Sowell, Lt. Comdr. Homer C. (S.C.), det. N. A. S., Coco Solo, C. Z.; to Asiatic Sta. (Oct. 29)

Sparrow, Lt. Edward, det. U. S. S. Patoka; to Nav. Hosp. in U. S. for treatment. (Oct. 19)

Thompson, Lt. Paul B., jr., ors. Oct. 14, 1927, modified; to duty involving flying with VO Sqn. 1B. (Nov. 1)

Weems, Lt. Comdr. Philip V. H., to temp. duty VJ Sqn. 1B, Airc. Sqdns., Battle Flt. (Nov. 10)

Willingham, Ens. Joseph H., jr., det. U. S. S. Denver; to U. S. S. Saratoga. (Oct. 29)

Woods, Lt. (j.g.) Ralph W. D., det. N. A. S., Pensacola, Fla.; to VT Sqn. 9S, Airc. Sqdns., Sctg. Flt. (Nov. 15)

Wyman, Lt. Ralph, det. N. A. S., San Diego, Calif.; to Asiatic Sta. (Oct. 21)

MARINE CORPS AIR ORDERS

THE following Marine Corps air orders have been issued as of the dates indicated in brackets:

Atkinson, 1st Lt. B. W. Atkinson, det. M. C. B., N. O. B., San Diego, Calif.; to M. B., N. A. S., San Diego, Calif. (Nov. 8)

Clements, 2d Lt. F. K., jr., det. M. B., Quantico, Va.; to M. D., U. S. S. Lexington. (Nov. 9)

Griffin, 2d Lt. R. L., det. M. B., N. A. S., Pensacola, Fla.; to A. S., E. C. E. F., M. B., Quantico, Va. Authorized to delay en route until Nov. 14. (Nov. 2)

Harmon, 2d Lt. J. C., det. Observation Sqn. 7, Nicaragua; to A. S., E. C. E. F., M. B., Quantico, Va. (Oct. 27)

Hopper, 2d Lt. R. E., det. M. B., N. A. S., Lakehurst, N. J. (Oct. 20)

Kaiser, 2d Lt. B. F., from M. B., N. A. S., Pensacola, Fla.; to special temporary duty beyond the seas with 3rd Brigade, China, via the U. S. A. T. Thomas, to sail from San Francisco, Calif., on or about Nov. 3. (Oct. 24)

Lamson-Scribner, 2d Lt. F. H., det. N. A. S., N. O. B., San Diego, Calif.; to Observation Sqn. 7, Nicaragua. (Oct. 20)

McCaull, 2d Lt. V. J., det. M. B., N. S., New Orleans, La., to M. D., U. S. S. Saratoga. (Oct. 20)

McFarland, 2d Lt. T. G., det. M. B., Quantico, Va.; to M. B., N. A. S., Pensacola, Fla. (Oct. 20)

McQuade, 2d Lt. T. J., det. 5th Regiment, Nicaragua; to A. S., E. C. E. F., M. B., Quantico, Va. (Oct. 26)

Wadbrook, 2d Lt. C. G., det. M. B., N. A. S., Lakehurst, N. J., to 5th Regiment, Nicaragua via the U. S. S. Nitro, scheduled to sail from Hampton Roads, Va., on or about Nov. 1. (Oct. 20)

Ward, Capt. J. G., det. Headquarters Marine Corps, Washington, D. C.; to M. D., U. S. S. Lexington. (Nov. 10)

AIRCRAFT CARRIER SARATOGA

(Continued from page 715)

The generators will be operated by steam from 16 oil fired boilers. The eight motors will be connected in pairs to each of the four propeller shafts. Each motor has a capacity of 22,500 horsepower and measures 15 feet in diameter. A total of 45,000 horsepower will be delivered to each shaft which will drive the propeller blades at 317 revolutions a minute.

Other subsidiary power demands on the Saratoga will be supplied by six 750 kilowatt direct current turbine generator sets. This equipment will operate the steering gear, anchor windlass, ventilation fans, lighting systems, radio, and telephone and telegraph. The elevators, search lights, fire alarm sys-

tem, cooking apparatus and refrigeration will also be electrically operated.

The Saratoga will carry 83 planes: Squadron VF-4B and VF-6B, 18 planes in each. Boeing fighters, single seater, Pratt and Whitney 400-horsepower air-cooled engines. Squadron VT-2B and VT-4B, 16 bombers in each. VO-2B, 12 observation planes, Vought Corsairs and one utility squadron of three Vought planes.

The Saratoga will have 1,365 enlisted men in the ship's crew and 450 men in aviation ratings. She has 104 ship's officers and 115 commissioned aviators attached to the ship's aircraft squadrons.

The Saratoga and Lexington will carry the best equipped aerological laboratories afloat. Aerological conditions will play a very important part in the aircraft activities of the Saratoga and Lexington and elaborate plans have been made to furnish their air squadrons with the best aerological information possible. Each ship will have two complete sets of wind direction and velocity, temperature, and humidity measuring equipment, one to be installed on the port side and the other on the starboard side.

There will be an aerological officer and about four or six enlisted aerographers aboard each vessel. Most of the aerological work will be carried on in a two room aerological laboratory on the second deck of the superstructure, where the recorders of the various instruments will be located. Here also will be installed the barometers, plotting boards and other accessories used in aerological work. On the main deck of the superstructure a room is reserved for stowage of hydrogen tanks from which pilot balloons are inflated for use in measuring upper air currents.

There is a complete hospital on board with an isolation ward for contagious diseases and an operating room with the latest modern equipment.

GRAY MADE RECORD ON HIS FATAL FLIGHT

THE highest altitude ever reached by man, 42,470 feet, was attained by the late Captain Hawthorne C. Gray, Army balloonist, on his fatal flight, November 4.

This is exactly the same altitude reached by Captain Gray on his attempt of May 4, which was not given official recognition because he violated one of the requirements essential to the acceptance of balloon records—failing to land in his balloon. This flight of Captain Gray's was not made for the purpose of breaking any altitude records but to test various equipment in rarefied atmosphere and incidentally to determine how high man can venture aloft with oxygen apparatus before starting to lose consciousness. When he passed 41,000 feet altitude last May he commenced to experience a pain in the chest and, acting upon the advice of medical officers, given him prior to this flight, he valved his balloon causing it to descend very rapidly. When the balloon neared the ground and with all ballast gone, it was going so fast that Captain Gray jumped with his parachute in order to save himself.



Officers of Air Corps on New England Flood Relief duty at Concord, N. H. Airport. Left to right: Lt. Orville L. Stephens, Mitchell Field; Lt. F. C. Wolfe, Mitchell Field; Lt. C. B. Overacker, Mitchell Field; Lt. John H. Price, Bolling Field, D. C.; Lt. W. W. White, West Point, N. Y.



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And it is one of the world's most versatile airplanes. It may be used with wheel or float landing gear, for deck landing on the aircraft carriers, for catapulting from the battleships and cruisers, for reconnaissance work, and for long-distance cross-country flying.

The "Corsair" is now in production and deliveries are being made to the U. S. Naval and Marine Corps Air Services.

The "Corsair" is designed around the P. & W. "Wasp" Engine

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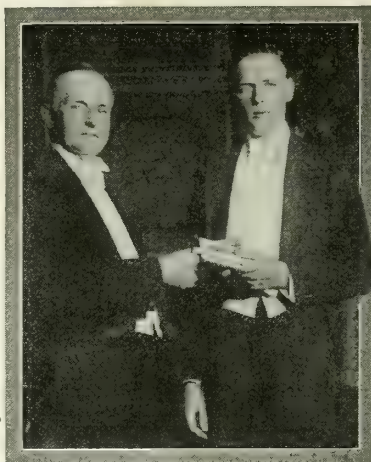
THE AERONAUTICAL INDUSTRY

HUBBARD MEDAL GIVEN TO COL. LINDBERGH

PRESIDENT COOLIDGE on November 14 presented to Colonel Charles A. Lindbergh the Hubbard Medal, the award of the National Geographic Society, for his achievement in making the first non-stop flight from New York to Paris. The award places Colonel Lindbergh alongside such illustrious pioneers as Commander Robert E. Peary, Sir Ernest Shackleton and Commander Richard E. Byrd, who were among the seven to receive the medal previously.

The presentation was made at the Washington Auditorium following an address by President Coolidge. Among the distinguished guests present were: Mrs. Coolidge, Mrs. Evangeline Lindbergh, Orville Wright, officials of the National Geographic Society, members of the Cabinet, Senate and House of Representatives, diplomatic representatives from many foreign countries and the following transocean fliers: Commander Richard E. Byrd and his transatlantic flight companions, Bert Acosta, Lieutenant Bernt Balchen, and Lieutenant George O. Noville; Clarence D. Chamberlin and Charles A. Levine; Lieutenants Lester J. Maitland and Albert Hegenberger, first fliers from California to Hawaii; Ernest L. Smith and Emory B. Bronte, civilian California-to-Hawaii fliers; Arthur C. Goebel, winner of the Dole Hawaiian flight, and Captain William V. Davis, who accompanied him; Paul Schluter and Martin Jensen, second in the Dole flight; William S. Brock and Edward F. Schlee, who flew half around the world, and Ruth Elder and George Haldeman, who made the longest over-water flight.

The exercises were presided over by Dr. Gilbert Grosvenor, president of the National Geographic Society, who introduced Presi-



President Coolidge presents the Hubbard Medal to Colonel Charles Lindbergh

dent Coolidge for the presentation of the Hubbard award for outstanding achievement in the field of aviation. A brief address was made by William P. MacCracken, Assistant Secretary for Aeronautics of the Department of Commerce. Colonel Lindbergh's speech of acceptance was followed by a showing of motion pictures of parts of his transatlantic and more recent flights.

TRANSOCEAN FLIERS AT WEATHER CONFERENCE

DESCRPTIONS of the atmospheric conditions encountered by the transatlantic and transpacific fliers and recommendations for improved meteorological services were presented at a special conference held in the office of Assistant Secretary of Commerce for Aeronautics, William P. MacCracken, jr., on November 14.

The Atlantic fliers at the conference were: Clarence Chamberlin, Charles A. Levine, Bernt Balchen, Edward F. Schlee, William S. Brock, Ruth Elder and George Haldeman. The Pacific fliers were: Albert Hegenberger, Lester A. Maitland, Emory Bronte, Arthur C. Goebel, and Paul Schluter.

Participating in the meeting were Assistant Secretary MacCracken; Director Clarence M. Young, and Eugene Sibley of the Aeronautics Branch of the Department of Commerce; F. Trubee Davison, Assistant Secretary of War for Air; Dr. James Y. Kimball of the United States Weather Bureau, New York City; Charles L. Mitchell and R. Hanson Weightman, forecasters of the United States Weather Bureau at Washington; Dr. C. G. Rossby, chairman of the Committee on Aeronautical Meteorology of the Guggenheim Foundation for Promotion of Aeronautics, and the following other members of that committee: Major William P. Blair, representing the Army; W. R. Gregg, representing the United States Weather Bureau; Lieutenant F. W. Reichelderfer, representing the Navy Department.

The recommendations from practically all of the aviators were that information exchanged between the weather observers advising the fliers and ships along the ocean routes to be flown be expanded and made more accurate, and that further experiments and investigations be made regarding the conditions of wind and clouds at different altitudes. Radio services, both beacon and information signals, were highly praised by those who used them, and all of the fliers expressed appreciation to Weather Bureau officials of the information and advice extended them before their take-offs.

The Byrd flight, which ended in a forced landing in a fog on the coast of France, might have been successfully completed if



Transocean fliers in front of the White House where they were received by President and Mrs. Coolidge

L. to R.—Clarence Chamberlin, Colonel Goebel, Colonel Lindbergh, Ruth Elder, Paul Schluter, Emory Bronte, Lieut. Hegenberger, Lieut. Noville, Lieut. Maitland, Commander Byrd, George Haldeman, Edward H. Schlee, Charles Levine, Bernt Balchen, and William Brock.

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there had been radio beacon services on the other side, said Balchen.

Lost over Paris in the fog, the fliers were unable to get radio reports from Paris and could not get their bearings because their earth inductor compass was out of commission. If they had known beforehand the weather conditions around Paris, Balchen believes the ship might have gone through the fog and continued to Germany.

Schlee and Brock asserted that the only places they obtained any weather reports after leaving the Atlantic Coast were at Croyden Field, England, for the flight to Munich, and at Shanghai, where they took off in the face of warnings of a typhoon and rode through a storm which made it possible to fly only 500 miles in 12 hours.

Haldeman said that the weather map furnished by Dr. Kimball had warned them of a low pressure area which they met as forecast. If their plane could have kept 15,000 to 18,000 feet high he does not believe it would have had the trouble it did. However, sleet formed on their plane and, although their motor was wide open, they could not maintain their altitude.

Chamberlin suggested that the problem of weather forecasting was purely a matter of getting the information together. "We hit everything as predicted," he said, speaking of Dr. Kimball's report, "except at the finish. All that is needed, it seems to me, is facilities for getting weather reports from the ships at sea. Then the forecasters could readily provide this data."

Although flying for 20 hours before he could sight the water beneath him, Colonel Goebel said his plane did not deviate from its course at all during the flight to Honolulu, thanks to the radio direction beacon. He flew at an altitude of 6,000 feet most of the way.

Captain Schluter, second in the Dole race to Honolulu, described how his plane flew low all the way and thrice went into tailspins, its landing gear touching the water once. More will be learned about the laws of winds if weather and wind determinations prevailing at different altitudes at the same moment can be made known, he said.

Lieutenant Hegenberger declared that for future flights better reports of wind conditions should be obtained by radio from steamships, whose skippers should supply more accurate barometer readings. He said shipping people were not now ready to go to the expense of putting the proper instruments on their ships for obtaining information valuable in flying. He wanted fog soundings, and also information as to where Cirrus clouds were to be found. The radio beacon, he thinks, is the best guidance yet devised for transoceanic flying, but it is subject to other interferences.

Lieutenant Maitland also emphasized the need of getting more accurate information relating to wind speeds and barometric pressure readings from ships.

Dr. Rossby stated that the weather problem for oceanic flights is not so much a question of forecasting as of gathering adequate information from the proposed line of flight.

Dr. Kimball said the forecasts given by Byrd,

Lindbergh, and Chamberlin were not the type given air men who fly across country. It was only possible, he said, to tell storm area movements and what would be the prevailing winds; it was impossible to forecast conditions over Europe. The maps supplied the fliers by the Weather Bureau showed conditions in all eastern parts of the United States and in western Europe with scattered reports from over the ocean lanes.

TRANSOCEAN PILOTS FORM ASSOCIATION

THE transoceanic fliers assembled in Washington for the meteorological meeting at the Department of Commerce formed the first transoceanic fliers' club with Colonel Charles Lindbergh as president. Lieutenant Albert Hegenberger was named vice-president and Edward F. Schlee, secretary-treasurer. All of those who have survived transoceanic flights to date are charter members.

MISS ELDER and HALDEMAN WELCOMED HOME

RUTH ELDER and George W. Haldeman received a rousing welcome on their return to New York on November 11. Broadway ticker-tape and cheers greeted this woman who achieved international fame as an aviator and her pilot and navigator, who, although they did not quite reach their goal, have flown further over water than any other human beings. Then, too, Ruth Elder is beautiful and her charm as well as her courage received its share of homage.

Haldeman's ability, courage and skill, although perhaps not as loudly proclaimed, was none the less fully appreciated by the aviation world. Speaking of their forced landing beside the Dutch steamer *Barendrecht* 300 miles from the Azores, Haldeman said that the oil pressure began to drop four hours before they sighted the vessel. The engine was still turning, however, when they sighted the ship, although the bearings were slowing burning out and the engine was knocking badly.

Haldeman brought the Stinson monoplane, *The American Girl*, down within a hundred feet of the *Barendrecht*, but before a boat could be lowered the plane had drifted a quarter mile away. Slashing a hole through the cabin, the fliers climbed out on the top of the plane. Miss Elder had on her rubber life-saving suit, and, as Haldeman had not time to put on his suit, told the crew to rescue him first.

They were not sure what caused the explosion that destroyed the plane but thought that either a spark from the scraping of the plane against the side of the iron ship or the heat of the engine itself caused the gasoline from the broken tanks to be ignited.

The fliers were received by Mayor Walker at the City Hall on the day of their arrival, who extended the city's welcome. The National Women's Party gave a dinner for Miss Elder paying tribute to her ability and courage as a woman. Both fliers were received by President Coolidge with the other transoceanic fliers on November 14,

and, at a reception given by Assistant Secretary MacCracken of the Commerce Department, joined the International Transoceanic Pilots' Association, which includes as charter members all of those who in the last year have survived transoceanic flights. After turning down many stage and motion picture offers, Miss Elder accepted a contract in vaudeville to give a short talk on her experiences. She plans to make another transatlantic flight next spring financed by the proceeds from this and other engagements of a similar nature.

CURTISS TO BUILD VERTICAL RISING PLANE

THE Curtiss Aeroplane and Motor Company is to construct a helicopter in the near future. The machine, of revolutionary design, is the invention of Maitland B. Bleecker, 24 years of age, a graduate in aeronautical engineering of the University of Michigan, who spent nearly two years in the Curtiss plant working up experimental data which was checked and rechecked by the company's engineers before a decision was reached to manufacture a full-sized ship embodying his ideas.

It is claimed that the Bleecker-Curtiss machine will rise and descend vertically with safety, carrying a useful load equal to one-fourth its own weight; that with engines totaling 300 h.p. it will climb with this load at the rate of 1900 feet per minute; that it will hover indefinitely over one spot or fly forward at 50 to 70 m.p.h., and that it can land straight down in a small space even if it sustains a total loss of motive power. It is believed that it will prove successful as a military spotting plane and for carrying mail from air mail terminals to Post Office roofs.

Its wings, of which there may be either three or four, revolve in a horizontal plane about a central axis; and it has a standard airplane fuselage. The plane is rotated by propellers half way out the leading edge of the wings. The first plane will probably have a wing spread of 35-40 feet and a light air-cooled engine of 35-60 h.p. in each wing.

LINDBERGH TAKES POST WITH GUGGENHEIM FUND FOR PROMOTION OF AERONAUTICS

COLONEL CHARLES A. LINDBERGH has rejected the many commercial opportunities offered to him and has accepted a position with the Daniel Guggenheim Fund for the Promotion of Aeronautics in a consulting capacity. He will be free to engage in any activities which will, in his judgment, promote the cause of aviation. At his request he will be at liberty to make such flights or other experimental efforts in behalf of aviation as he may choose upon his initiative and responsibility.

He will become a member and trustee of the fund and his official headquarters will be at the office of the fund, at 598 Madison Avenue, New York City.

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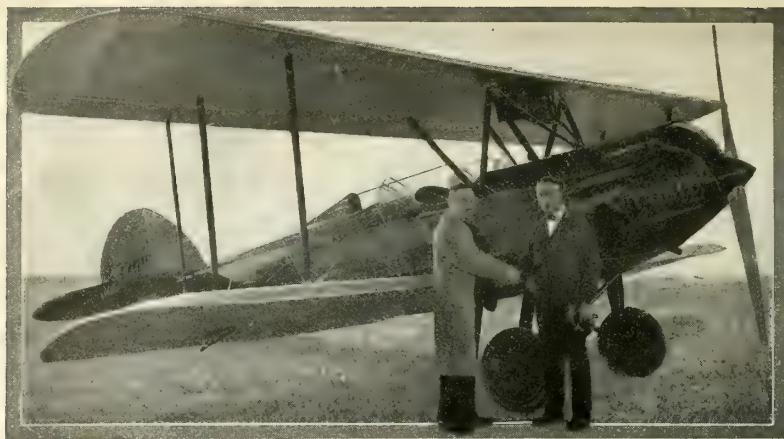
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The Union Trust Co. of Detroit's Waco. William Brock (left) and Ray Collins.

DETROIT AIR NEWS

By FRANK BOGART

THE biennial city elections on November 8 had two results of importance bearing on aviation in Detroit. Mayor-elect John C. Lodge is the grand-uncle of Colonel Charles A. Lindbergh. And voters of Detroit as well as all of Wayne county approved a \$2,000,000 bond issue for a municipal airport to give the city its proper status with other large cities of the country. There have been other "proposals" for municipal airports approved by voters in the past, but strife over selection of the site and the means of payment to be adopted have balked all plans hitherto. With the present project under the direction of the county government, in which Mayor-elect Lodge also plays an important figure as a member of the county supervisors, and the bond issue approved, it is believed now a site will be picked by spring and the board of county road commissioners empowered to build the port. This body has all the engineering force and equipment necessary for the task.

DETROIT'S only air taxi service, the Wayco Air Service, Inc., headed by Edward F. Schlee, is entering the winter with prospects of undiminished business. D. S. Robins, in charge of traffic problems, says his fleet of four machines will carry many Detroiters to Florida between now and February. The fleet also came into action during the New England floods, when two planes were chartered by firms near Springfield, Mass., to haul cargoes to the middle west that could not be got out by rail. Several round trips were made and on most of them the load averaged 1,500 pounds.

SCHLEE, and his co-pilot, William S. Brock, of the *Pride of Detroit*, are centering all efforts on their plans to go after the endurance record in March at Daytona Beach, Florida. Theirs will be one of half a dozen or more similar attempts, it is expected.

OFFICIALS of the First National Bank have directed engineers and contractors erecting a 25-story addition to their present structure to make provision for the future placing of an airplane landing platform on the roof of the building.

HARRY A. GRAHAM, chairman of the board of the Stinson Aircraft Corporation, has gone to California to confer with a Los Angeles group which is seeking to become western sales representatives for this company and to establish airports and taxi lines all along the West Coast.

THREE of the trimotor Ford transports were delivered the past month to J. L. Maddux, Lincoln dealer at Los Angeles, who plans to operate the fleet between San Francisco and El Paso, saving a day and a half over the train trip between the two points.

RAY COOPER of the Board of Commerce has flown 30,000 miles in the past 60 days arranging for the Fourth Annual National Air Tour of 1928 for the Edsel Ford trophy and sounding sentiment of the industry generally toward holding a national aircraft show here in April, the successor of the All America Aircraft Display at Washington last May.

PROFESSORS E. A. STALKER and L. V. Kerber, the latter Guggenheim professor of aeronautics at the University of Michigan, are designing a new type of craft for a Michigan manufacturer. They are now testing models in the recently completed wind tunnel at Ann Arbor, which was finished with money from the Guggenheim Fund. The ground school course at the University under auspices of the Naval Reserve, has 169 students now enrolled.

UNION TRUST CO. OF DETROIT'S NEW PLANE

"TRUSTY" is the name of the new Waco-10 purchased by the recently established aviation department of the Union Trust Company of Detroit. The Union Trust Company is the first financial institution in the United States to establish a regularly authenticated aviation department and to make practical use of air service in its business. The company is fortunate in being able to command the services of so well-known an aeronautical expert as Ray Collins, pilot of their plane. The establishment of the aviation department is a continuation of the interest which the Union Trust Company, particularly its president, Frank W. Blair, has taken in aviation advancement.

STOUT AIR SERVICES

NEARLY sixty per cent of the total capacity business was done by the passenger line of Stout Air Services, Inc., between Detroit and Cleveland, in its first month of operation, reports Stanley E. Knauss, general manager.

The exact figures for the month of November were not quite complete but it appeared that more than 600 persons will have been carried. There are two round trips daily by the ten-passenger Ford cabin transports.

From Detroit the planes have more often than not gone out with more than the ten persons aboard, but the business in Cleveland has not yet risen to any such proportions. Yet it took the Stout concern 12 months to roll up a total of 2,000 passengers on its Grand Rapids line, now temporarily abandoned. In carrying more than one-fourth of this number in a single month, Knauss feels that they have experienced a very successful inaugural. The fare is \$18 one way; \$35 round trip. The distance is 128 miles and the scheduled flying time 100 minutes, although this is often bettered. Transportation from hotels to airports at both ends is included in the fare.

One of the most sincere endorsements of the new service has come from the Detroit manager of the Telautograph Corporation, C. M. Huber. He compares the automobile trip between the two cities to that by air, saying that the distance by motor car reduces the air fare to 9 1-2 cents a mile. It is approximately 50 miles further by road. Since he estimates it costs him 10 cents a mile to drive his car and he must take two days for the trip, he finds that traveling by air, with more than three hours to transact business in Cleveland, allows him to make the trip in a single day, with the privilege of staying over night if he needs to.

It is indeed almost a revelation to visit the new passenger depot on Ford airport and witness the departure or arrival of one of the liners. Passengers arrive aboard a special bus of the Detroit Street railways. If there is time to spare they may ascend to the second floor and go out onto the observation gallery which girdles the building, to have pointed out to them all the features of the airport—the radio beacon station, airship mooring tower, flood lights, radio towers, etc. In the waiting room and ticket office they buy their tickets just as they would in a railway station. Fifteen minutes before the hour of departure the ship comes on the line. Pilot and mechanic spend a last five minutes going over every detail. The pilot then takes his station and cannot again leave the cockpit for any reason whatever. A redcap carries out the baggage to be stowed away. There is still ample time for all to seat themselves comfortably. There is none of the flurry and bustle so common about flying fields. A "dispatcher" waves the plane off exactly on the proper second. A concrete runway keeps the dust out of spectators' eyes. There could not be, nor is there, more ceremony or precision to the departure of the "Twentieth Century" than there is when these airliners glide off.

OPPORTUNITY KNOCKS ONCE AGAIN!



Aviation Town and Country Club of Detroit Trophy Light Commercial Speed and Efficiency Race. Races held at Spokane, Washington, Sept. 23rd.



Detroit News Air Transport Trophy Air Transport, Speed and Efficiency Race. Races held at Spokane, Washington, Sept. 23rd.

Lt. John H. Miller, winner of the two Trophies shown here and former instructor at Great Lakes and Pensacola, Florida, is now our Chief Instructor and under his instruction you too can be the success that he is.

READ LT. MILLER'S MESSAGE TO YOU

WRITE FOR

MORE INFORMATION

"To those who cannot see into the FUTURE and the GREAT MEANING—AVIATION—has for the WORLD and to the MAN or WOMAN who wishes to make their life a SUCCESS in a BIG WAY, I wish to say, 'I do not believe there has been an opportunity like AVIATION, open to men and women since the Automobile was first invented.' With the right kind of training, you should be able to go to the top in this new industry.

"I am in a position to know that with the equipment and instructors at the CHICAGO AERONAUTICAL SERVICE School anyone who passes the examination can be well on his way to success in a very few months."

John H. Miller

Mail This Today →

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Chicago, Illinois

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Say you saw it in AERO DIGEST

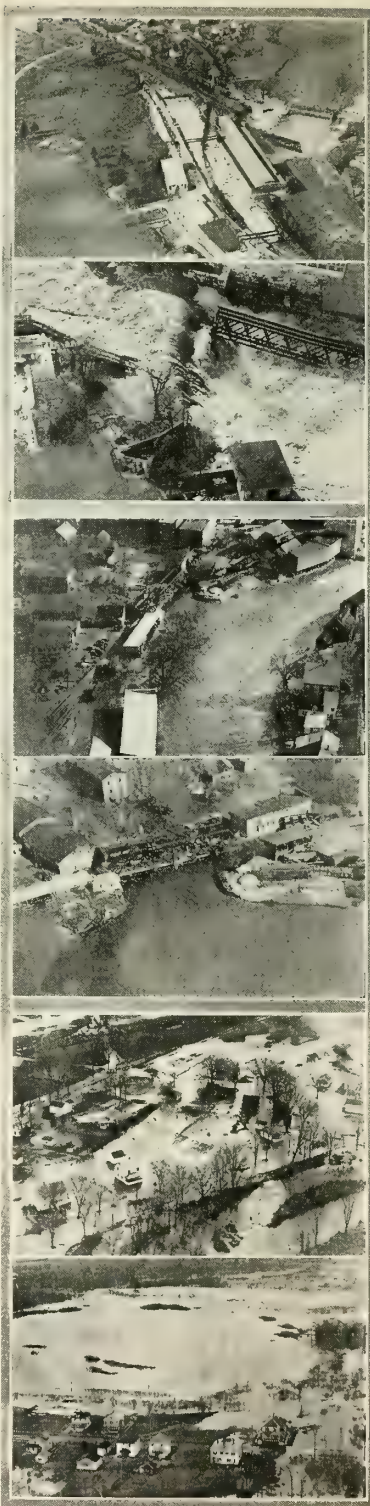
CURTISS FLYING SERV. "COVERS" THE FLOOD

THE recent disastrous flood in New England furnished a striking example of the value of airplanes in obtaining photographs and first hand information of the extent of damage caused by such catastrophes. On Friday, November 5th, when the flood had paralyzed rail and wire communications in the stricken area, calls began to come in to the Curtiss Flying Service office at Garden City for airplanes to fly over the district and report the damage. M. M. Merrill, manager of the Flying Service, left Curtiss Field at 3 p. m. in a Fairchild monoplane, carrying *Daily News* and Newspaper Enterprise Association photographers. They flew over Beckett, Mass., and Pittsfield, and returned at 6:30 with the first pictures of the flooded area. The return flight, over bad flying country, was made in darkness, and it was necessary to fly a compass course the entire distance.

On Saturday, November 6th, Pilot Winston, in an Oriole, with an N. E. A. photographer aboard, took off at 6:30, landed at Glens Falls, N. Y., for gas, and then flew for seven hours over the flooded district, getting up as far as Montpelier, Vt., where the damage was heaviest. They returned to Curtiss Field at dark, and were the first eye witnesses to get back to New York with an account of the damage done at Montpelier. Winston reported that the flying was one of the most ticklish jobs he had ever tackled. The territory over which they were flying was mountainous, the few landing fields inundated, and to add to their difficulties, rain and fog set in during the afternoon.

On the same day, Merrill, accompanied by M. G. M. camera men, flew over Beckett and obtained pictures, returning before lunch. In the afternoon Merrill attempted another flight but ran into heavy rains and fog and was forced to turn back.

On Sunday, Winston, with C. B. Allen of the *New York World* and a camera man, and Merrill, with *Daily News* and Pathé camera men, started out for the flood area. Both pilots reported that weather conditions were probably the worst they had ever encountered. Snow, fog, rain, and "rough" air added to the difficulties of flying over mountainous territory. In spite of these handicaps, Winston, who flew along the Connecticut Valley, got through to Montpelier and his newspaper men returned with graphic accounts of the conditions encountered. Merrill followed the Housatonic River, ran into a terrific snow storm, became locked in a valley which kept growing narrower, and with considerable difficulty turned around and flew back to Pittsfield to wait until the storm had abated. In an hour, another start was made, and after some difficult flying Merrill succeeded in reaching his objective, Hartford. By a curious coincidence, just as Merrill's party had finished taking pictures and were ready to turn back, Winston's plane suddenly appeared from the north and passed them, homeward bound.



Air views of the New England flood. The two at the top are of Rutland, Vt.; center, Montpelier, Vt.; two views at the bottom, Pittsfield, Mass.

On Monday, Merrill again carried photographers over Middletown and Hartford. Thus, when other means of transportation and communication were demoralized, the airplane was pressed into service.

CONCORD AIRPORT BASE FOR FLOOD RELIEF

WHEN the unprecedented heavy rains of November 3 and 4 covered all of northern and central New England with from four to eight inches of water and breaking dams and rushing streams commenced to raise havoc all over these northern states, and particularly in Vermont, the U. S. Army quickly got its rescue forces organized with Major General Preston H. Brown, Commanding Officer of the First Corps Area in personal charge.

General Brown promptly decided that airplanes must be used to survey the situation and to make emergency deliveries of needed supplies. So he called on Mitchel and Bolling Fields for planes, the Boston Airport Air Corps being reduced to only a couple of PTs and a Vought, and ordered a concentration of rescue planes at the Concord Airport which was on the southern end of New Hampshire's flood area and out of the shore line of fog belt.

The Concord Airport, although not a year old, had previously been used by the Air Corps as an intermediate field for service on cross country flights, and during last July as a training field for the 322 Observation Squadron, Organized Reserves, so the Commanding General knew that it was ready.

On Saturday, November 5, Lieut. Richard Cobb arrived as the advance guard of the Air Corps and Lieut. R. D. Thomas, U. S. N. R., from Squantum Naval Station dropped in for a brief visit, as did several Boston Airport Corporation planes. And from then on until Tuesday afternoon following the airport became an advanced flying base of the Air Corps.

Sunday morning the Air Corps arrived thick and fast. General Brown flew in in an amphibian drafted from Mitchel Field and piloted by Lieut. Donald Duke, accompanied by another amphibian, the *San Antonio* of Pan-American Good-Will Flight fame, piloted by Lieut. Newton Longfellow. Another early arrival was Lieut. A. H. Gale with Staff Sgt. McQuillan, from Mitchel Field in a photographic De Havilland. Capt. Christopher W. Ford, acting Air Officer of the First Corps Area, drifted in in one of Boston PTs to make sure that all was okeh, and, on his departure in the early afternoon, Lieut. Gale assumed command of the base. Two Douglas O-2s from Mitchel Field were early arrivals, manned by Lieuts. Orville L. Stephens, Franklin C. Wolfe and C. B. Overacker.

In the early afternoon General Brown departed for Burlington, Vermont, in the amphibian in which he arrived, accompanied by the *San Antonio*. Shortly after their departure the *San Francisco* appeared over the field, another Good Will Tour amphibian piloted by Lieut. John H. Price from Bolling Field, carrying an Associated Press reporter, and not long after the fourth amphibian set its wheels on the runways, having come from West Point, N. Y., via Boston and the flooded area of the Connecticut River. So Concord Airport was visited in one short afternoon by four Army planes

(Continued on page 728)

X-MAS IS CAMING!

Suggestions for THE PILOT

The law compels him to keep Log Books—start his New Year with a new set.

The pilot is interested in all items listed on this page

DON'T GIVE HIM A RED NECK-TIE OR AN IRISH LACE FISH BOWL THIS YEAR!

GIVE HIM SOMETHING HE NEEDS AND WILL CHERISH!

Suggestions for THE STUDENT

Books
Model Airplanes
Clothing
Aero Jacks
Binoculars
Helmets
Speaking Tubes
Goggles

BOOKS and MAPS

Camp Site and Landing Field Guide Book.....	\$.25
Flight record cards .....12 for	.25
Flight record cards .....100 for	1.25
Rand, McNally indexed state maps, any state....	.35
Pilot's log book .....	.50
Airplane log book .....	.75
Engine log book .....	.75
Set of 3 log books in aluminum binder.....	3.00
Waterproof canvas bag for log books.....	.50
A.B.C. of Aviation—275 pages, illustrated.....	1.75
Book of the Sky—236 pages, illustrated.....	2.00
Airmen and Aircraft—216 pages, illustrated....	3.50
Aircraft Power Plants—208 pages, illustrated...	4.25
Airports and Airways—178 pages, illustrated....	5.00
Aircraft Instruments—269 pages, illustrated....	5.00
Leather and celluloid map case, with pad and pencil	2.00

CLOTHING

(Give Sizes in Ordering)

"AERO-JACKS"—The new all-weather jacket as nationally advertised—warm—neat—strong	
Children's sizes	\$ 3.50
Ladies sizes	5.00
Men's sizes (gray or tan)	5.00
Leather jackets—finest quality.....	17.00
Lee mechanic suits, Zipper fasteners.....	4.50
Lee flying suits, Zipper fasteners.....	8.00
"Winter King"—winter flying suits—felt lined—fur collar—Zipper fasteners.....	29.50

Suggestions for The Inquisitive PEST

Moccasins
Fire Extinguishers
Very Pistols
Waterproof Bag
State Map
Binoculars
First Aid Kits

AND! WITH EVERY ORDER

Marked "X-mas" we will include our own useful little gift—can be used in the office—the home—garage or ship.

We wish all of you A Merry Christmas—and we know you will all have A Happy and Prosperous New Year.

1928 should be the best year in Aviation yet!

Moccasins—3 buckle, black, wool lined.....pair	4.00
Gloves—one fingered wool lined mittens.....pair	6.00

HELMETS and GOGGLES

Johnson speaking tube set, complete with 2 helmets.	\$20.00
Soft leather helmets, wool lined.....	5.35
Soft leather helmets, chamois lined.....	6.50
Gabardine helmets, leather trimmed.....	5.00
Genuine Luxor Air Service Model No. 6 goggles....	10.75
Genuine Luxor Air Service Meniscus cylindrical lense	15.00
Genuine Resistal Goggles N. A. K.....	3.95
Genuine Resistal Goggles W. Y. D.....	2.95

MISCELLANY

Pyrene fire extinguishers, 1 qt.	\$10.00
Pyrene fire extinguishers, 1 pt. in Xmas box.....	7.50
First aid kits, with bracket.....	1.45
Johnson air speed meter, strut type.....	4.80
Johnson all-leather safety belt, new type.....	4.80
Clocks, Waltham	16.00
Johnson air speed meter, with pitot tube, new.....	24.00
Model airplane—"Spirit of St. Louis".....	10.00
Flash fire extinguisher, 1 qt.	9.00
Flash fire extinguisher, 1 pt.	6.00
Navigation lights—molded pyralin, per set.....	15.00
Very pistols—bronze barrel	15.00
Binoculars—6 power prismatic, leather case.....	38.00
Binoculars—8 power prismatic, leather case.....	40.00
Airplane radiator ornament for autos.....	3.00

Suggestions for THE BOY

Model Airplanes
Aero Jacks
Books
Binoculars
and
Everything
for him to
build his own
models with.

JOHNSON AIRPLANE & SUPPLY CO.
DAYTON -- OHIO

Numerous commercial planes also used the airport during the day. Boston Airport Corporation's two Stinsons, Whirlwind Travel Air and an OX job stopped for service and information. Lieut. Robert S. Fogg, who arrived home from New York at noon in his Waco Whirlwind *New Hampshire*, did a good business taking passengers for short hops over the flooded area immediately north of Concord.

During Sunday, Monday and Tuesday the Army ships were constantly on the move to and from the stricken areas of Vermont, carrying yeast, sugar, saccharine, salt and mail, and surveying the ravaged country and gathering information regarding the pressing needs of the stricken towns.

On Tuesday noon orders arrived for Lieut. Cobb to go to Fort Ethan Allen, which is a short distance outside of Burlington, Vt., and supervise the preparation of a landing base there. The other planes were directed to return to the Boston Airport for checking over preparatory to moving to the new Burlington base, and by nightfall the army ships had all hopped off to the south.

On Thursday morning, Lieut. Fogg started carrying first class mail to Montpelier and Burlington under contract with the Post Office Department for emergency service. Leaving the airport at 8 a.m., he landed at Montpelier to leave mail and to pick up mail for Burlington and the West; landed at Burlington to leave mail from New England and Montpelier and to pick up mail from the West for Montpelier, and from Burlington to New England; landed again at Montpelier to deliver mail received at Burlington and to pick up mail for New England; and then back to Concord. On November 15 he started making two flights each day, which necessitated starting the first trip at seven and the second not later than twelve-thirty. The route is about 320 miles and is over hilly and mountainous country with few fields.

BILLINGS HERO IN NEW ENGLAND FLOOD

WHEN the flood gates were opened, and the states of Vermont, New Hampshire, western Massachusetts and Connecticut were submerged by raging waters, creating a situation similar to that which the Mississippi valley underwent some months ago, the largest cities, as well as the smallest hamlets of Vermont especially, were cut off from the world and provided the opportunity to show the world at large that the airplane is of as much use in an emergency as it is for straight commercial flying.

Had it not been for the courage of B. F. Billings, operations manager of the Boston Airport, in flying over the flooded area and sizing up the situation it is possible that the death rate would have been much higher than it was. Billings conclusively proved, by his activities during the disaster, to the few remaining skeptics, that when there is ground to cover, things to do and places to reach, whether it be a joy hop to California, or an observation flight over Walla Walla, the airplane is the thing to use.

On Saturday, November 5, the *Boston*

American called Billings and asked him if it were possible to fly up to Montpelier, Vermont, to survey the damage and take pictures. Billings assured them that he was ready to fly them anywhere at all and consequently arrived over Montpelier at noon in one of the Stinson-Detroits owned by the Boston Airport Corp. After discovering that he could not set the ship down because of the lack of a field big enough, Bill returned to Boston, loaded three hundred pounds of yeast into an OXX6 Travel Air, and hopped off for Montpelier again. He landed on the farm of W. A. Cutler, about one mile out of Montpelier. Thus Billings was the first man to reach Montpelier from the outside and also the first man to bring supplies in to the stricken city.

The next morning, Sunday, with enough gas to reach Clermont, N. H., in the tanks, Billings gathered, unofficially, the first mail to be sent from Montpelier to the outside world, and flew it back to Boston, under threatening skies. Bill's mail pilot license enabled him to carry the mail.

With the same plane refueled and with five hundred pounds of yeast loaded into the front cockpit, along with newspapers and tobacco for the Cutler family, Billings took off again at two o'clock Sunday for the flooded regions. The skies that had been threatening in the morning closed in above

mountains but the wind was just right and he set down in soft ooze without scratching the plane at all. The forced landing was made near South Royalton, Vermont, outside the flood area, and with the training of the mail, Bill completed his errand. Robert L. O'Brien, State Aircraft Inspector and pilot for the Aircraft Corp., with Mechanic P. M. Tibert, loaded parts and tools into the J-4 Travel Air, and flew up to Billings. The necessary repairs were made and all hands returned to Boston.

With the experience of the three days flying over the regions inundated by the flood, Billings was able to offer advice to the other commercial pilots who were contemplating trips to the flood area. Bob O'Brien took Mr. Farrar, of the Guaranty Trust Company of Chicago, to Montpelier to see that his family was safe. Ralph T. Wickford, pilot for the Airport Corp., flew a Stinson, chartered by the Carter Knit Underwear Co. of Needham, to the flood, carrying twenty cases of underwear. Wick reported high winds with some snow from Concord, N. H., all the way to Montpelier.

When the danger was past, and the roads were in passable shape, Billings took stock of the flying done and discovered that 54 hours of flying had been accomplished under the most severe difficulties, and that all scheduled trips had been completed. All in all, nearly a ton of yeast was carried in four trips, of which two were to Montpelier, one to Berlin, N. H., and one to St. Johnsbury and Newport, Vt.

BOSTON AIR NEWS

By G. W. HAMBLIN, JR.

AIR Service of New England, Inc., broke into the front pages of the newspapers hereabouts with their announcement that a Vocational Conference would be held in the Chamber of Commerce on October 24. Major Ira J. Longanecker, Corps Area air officer; Lieut. Reginald D. Thomas, commander of the Squantum Naval Air Base; Lieut. Walter F. Eade of the Aeronautical Engineering Department of M. I. T.; Franklin T. Kurt of Dennison Aircraft; E. P. Gorden, wartime pilot; Raymond P. Baldwin, president of the Boston Airport Corp.; Eddie O'Toole, vice-president of the Airport Corp.; B. F. Billings, operations manager of the same company; and Harold Dennison, president of Dennison Aircraft, comprised the list of speakers. Daniel Rochford of the *Boston Transcript* was introducing officer. About one hundred and fifty attended the meeting, and comments heard after the affair was over were very favorable.

It was learned soon after the conference that the Air Service of N. E. was planning a ground school for the winter months for those who wish to get the story of the "why" of airplanes, and then go right along through the flying school. We understand that the ground school operates separately from the flying school and that a student in the ground school may or may not enter the flying school, according to his wishes. If he does, the tuition paid in the ground school will apply to the fee of learning to fly.

(Continued on page 730)



B. F. Billings of the Boston Airport

Clermont and piled snow down, forcing Bill to turn back and spend the night in Clermont, where the excellent facilities offered by the field were pressed into service. Billings hopped off at dawn Monday morning to run into freezing weather and snow flurries above White River Junction. By utilizing every opportunity offered, he managed to grope his way to Montpelier and upon landing had his carburetor freeze up. National Guardsmen assisted him in getting the motor in fair shape and all hands turned to the task of loading four sacks of first class mail into the ship. Twenty-four minutes after taking off from the Cutler farm in a high wind, the OXX6 cut out due to the jets freezing again and Bill was faced with the problem of picking a field in very mountainous country. The only field available was hemmed in on three sides by

Standard J 1 airplanes—

completely rebuilt and recovered with
factory rebuilt OX5 engines, set up, test
flown, and ready for fly-away delivery . .

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Standard J 1 airplanes—

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Having a 500
pound pay load

with Liberty "12" motors . . . **\$2500**
to **\$5000**

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Having a 1,000
pound pay load

with Liberty "12" motors . . . **\$5500**
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Orioles—3-place

with 180 h.p. Hispano motors
wonderful performance . . .

\$1500

1150 Factory rebuilt OX5 engines . . . **\$350**
Government overhauled OX5 engines . . . **\$250**

LEARN TO FLY **\$100.00**

OLDEST AND LARGEST FLYING SCHOOL IN THE
COUNTRY

THE NINTH YEAR OF OUR SCHOOL

WRITE FOR NEW FREE CATALOGUE

ROBERTSON AIRCRAFT CORPORATION
St. Louis Flying Field Anglum, Missouri

A. LEWIS MACCLAIN, with a brand new Travel Air and a brand new wife, came back to his old haunts at the airport during the month and resumed his work as student instructor for the Boston Airport Corp. The new OXX6 Travel Air that MacClain brought in was afterwards sold to Mike Harlow.

THE new sign, giving the direction of the airport, on the roof of the Hotel Statler, was dedicated by B. F. Billings and William Eaton from one of Stinson-De-troisers owned by the Airport Corp., Billings doing the flying, and Eaton dropping flowers. Johnny Stiles, photographer of the Corp., later took pictures of the sign and Fairchild Aerial Photos sold them to the Boston papers.

ANOTHER new pilot was added to the roster of the corporation when Lieut. Robert Nagle was engaged for student instruction work and passenger carrying. Bob is a pilot in the Massachusetts National Guard. He had his first cross-country with the corporation on November 15 when he took a chap named McKenna to Concord, N. H. Bob says that the Stinson is quite an airplane and has a load of fun hauling short hop passengers around town. The Stinson, being a well-behaved airplane, flies itself, and Bob just sits there and chews on a cigar. He is running a close third to Billings and O'Brien in the cigar chewing contest.

DURING the stress of the flood activities two more pilots were taken on, Crocker Snow and August Pabst, both of the Harvard Flying Club, being the auxiliary pilots engaged.

THE number of students on the books of the Airport Corp. has passed the one hundred and fifty mark and has all the earmarks of climbing still higher.

THE Harvard Flying Club is maintaining its high average of flying hours and has added W. Nelson Bump, president of the organization, to its list of pilots. Bill received his State flying license from Bob O'Brien and is now entered in the contest of the most handsome pilot in the club. Crocker Snow and H. G. Gregg, along with "Augie" Pabst have got quite a lead on him. Gregg, by the way, is the inventor of the famous "Gregg Washing of Airplanes" (Copyright, or what have you?). Gregg's receipt is as follows: Take one bucket half full of water; dump in three packages of Lux; bathe plane generously with same, let stand in hot sun. Talk to all the girls on the field, telling them how great it is to be a flier. Return to plane; wash off suds with hose and yell for Eddie O'Toole to "Fergawdsakepaintthiscrate," and go home to dinner.

TOMMY CROCE, sole owner of the Flying Cloud Air Service, and his Standard are running "Kid" Barry a close race for premier honors in the ticket selling game. Barry, very discreetly, offers a ride at three thousand feet at one hundred miles

an hour, and Croce offers a hop at six thousand feet and two hundred miles an hour. At the time of going to press, Barry had not thought up an answer to this exceedingly "fast one."

COLONIAL AIR TRANSPORT announces that they have purchased three Pitcairn Mailwings, equipped with Whirlwinds, for the Boston-New York mail run. Here's where Leroy Ponton "BonBon" De Arce parks the "Iron Hat" in moth balls and dons the ole "Red Flannels."

WHO'S WHO AT THE BOSTON AIRPORT

B. F. BILLINGS, manager of operations of the Boston Airport Corp., was born in St. Joseph, Mo., on May 4, 1896. He attended the ground school of the University of California, and graduated from Mather Field, Sacramento, Cal., on Oct. 30, 1918. After the war, he worked for the E. M. Laird Aircraft Co., the Swallow Aircraft Company, Travel Air Aircraft Company, all of Wichita; was half-owner of the Billings-Brown Air Lines, of St. Joseph, Mo., in 1923 and 1924; barnstormed down south for a year and then went back with Travel Air. He delivered the Brown ship, which was extolled in the November issue of AERO DIGEST, to the airport and signed up in his present capacity with the Airport Corp.

Bill's magnetic personality has made a place all its own in the lives of everybody at the airport.

YALE AERO SOCIETY

FLIGHT instruction is being given to the members of the Yale Aeronautical Society at Brainard Aviation Field, Hartford, Connecticut. The instructor is Lieut. Harry D. Copland, who has been flying for sixteen years, and who served as instructor in the Gosport Air School during the war. Approximately twenty-minute periods of instruction are given at the rate of \$25 per hour. Free medical examination is given to the members by Capt. William B. Smith, M.D., Aviation Medical Examiner. James E. Thayer is manager of the Society's flying activities.

Officers of the Society are: S. Longmaid, president; N. L. Engelhardt, Jr., vice-president; G. E. Beardsley, Jr., Secretary; and G. L. Kreider, recorder.

SPRINGFIELD NOTES

By H. P. LEWIS

DUNN FIELD in Longmeadow has definitely been abandoned as a possible site for the Springfield municipal airport as a result of protests by residents of the suburban town and the recent flood which completely covered the proposed flying field. The city had practically decided on the field for its municipal venture when the unprecedented high water rose far above the highest knoll in the field. Where the city will turn next remains in the air. There are two other prospective sites, one of which is located in Agawam and has been used throughout the past summer by the Massachusetts Airways, Inc. This field is far above the high water level and during the recent flood planes owned by the company were kept in the air practically every day on frequent photographic expeditions over the inundated regions. Flights were made as far north as Bennington, Vt., and up the Westfield River to Becket. The company sold several hundred photographs to newspapers and news services which were handicapped by washouts in getting their own photographers into the region.

PILOT HARRY HERMANN of the Springfield Airlines, Inc., which holds a lease on Dunn Field, was successful in flying one of two planes away before the high water covered the field, but a new machine which was being assembled had to be abandoned when difficulty was experienced starting the motor. This plane was towed to the highest point on the field and firmly secured. It is not believed the plane was damaged other than having its brilliant aluminum coating smeared with mud.

A SCHEDULED flight by the Royal Air Truck to Springfield was cancelled when the high water rose seven feet above the level of Brainard Field at Hartford, Conn. The month has been unusually poor for flying as much because of poor weather and low average ceiling as because of the flood.

TWO ground schools are being conducted in Springfield, and one has already started a second class. There is a possibility that the State Department of Education will start a University Extension class in Popular Aeronautics in February.



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PENNSYLVANIA NEWS

By RAY KRIMM

E. W. DAY, W. S. Green and H. A. Kinney, three new aircraft inspectors of the Aeronautics Branch, Department of Commerce, arrived in Philadelphia, November 8, with Ralph Lockwood, chief inspector, to take instruction in aircraft inspection at the Philadelphia Airport.

Under Lockwood's direction, the three men were shown how to inspect the seven standard and experimental ships of the Ludington Philadelphia Flying Service, airport lessee. When they have completed their course, they will be added to the thirty other Department of Commerce aircraft inspectors operating throughout the country.

PENNSYLVANIA has another airport. Oil City, after appointing a committee of citizens, is assured of a field. The site has been approved by the government, and a citizen, whose name has been withheld, has contributed a sum sufficient to purchase land for the flying field and install the necessary equipment.

The land purchased is 1100 by 2290 feet and is on an improved road, three miles from Oil City. According to Chamber of Commerce officials handling the project, very little grading will be necessary. Arrangements are being made for the installation of field and boundary lights and the erection of a hangar.

THE Bureau of Aeronautics of the Department of Internal Affairs, in a report completed early in November at Harrisburg, announced that Pennsylvania has fifty-six flying fields, as compared to ten in 1925. Three of the fields are in or near Philadelphia and three are near Pittsburgh. The remainder are scattered throughout the state.

WHEN the Public Service Commission of Pennsylvania met in November, four aviation companies applied for incorporation. They were the Reading Airways, of Reading; the Gettysburg Flying Service, of Gettysburg; the Noble Aircraft Company, of Pottsville, and the Pennsylvania Aerial Transportation and Express Company, of Wilkes-Barre.

The Gettysburg and Reading companies announced they were ready to start immediate operations. The Wilkes-Barre and Pottsville companies expect to start within a few months if their applications are granted.

Regulations of aerial common carriers is a phase of public service on which the commission will have to feel its way, the applicants were told. The Commission's attitude was favorable, however, and no opposition was brought forward by motor bus or railroad companies.

Sponsors for the Reading Airways told the commission that an airport has been acquired and that two planes have been purchased for passenger service. The Wilkes-Barre organization said it would establish regular service between that city and the east, south and west, carrying passengers, freight and mail. Six and eight-passenger planes will be used.

WITH the sending of two Pitcairn Orowings to Candler Field, Atlanta, Ga., on November 8, Pitcairn Aviation, Inc., with headquarters in Philadelphia, established the southern terminus of the New York to Atlanta airway over which the company will later inaugurate an air mail service under contract with the government.

Inability of the Department of Commerce to complete the lighting of the route, however, has forced postponement of the service until next year. March 1 has been set by the government as the date on which it expects to complete the lighting arrangements.

At Candler Field the Pitcairn operations will be known as Pitcairn Aviation of Georgia, Inc. J. Ben Faulkner, who for the past year has been field manager of Pitcairn Aviation, Inc., at Pitcairn Field, Halowell, Pa., near Philadelphia, has been sent to Georgia as manager of the Pitcairn operations there. Pilots Sterling Smith and J. W. Shaffer flew the two Orowings to Candler Field. They were accompanied by Edward S. Barringer and J. B. Hand, mechanics, who, with the pilots, will remain at Candler Field as a permanent staff.

With the incorporation of operations at Candler Field, the Pitcairn organization has completed its stations on the New York to Atlanta air mail route. The northern terminus will be Hadley Field, New Brunswick.

The Philadelphia air mail stop will be made at the Philadelphia Airport, on Island Road, about four and a half miles from the central section of the city. The field is equipped for night flying, the Ludington Philadelphia Flying Service, airport lessee, having spent \$12,500 recently for boundary lights, a radio beacon, and a 500,000,000 candlepower field flood light.

Through the courtesy of the U. S. Army Air Corps, the Washington stop will be made at Bolling Field, the Air Corps having consented to the field's use until Washington establishes a municipal airport. The main depot of the line will be at Richmond, where the Pitcairn organization has erected a \$14,000 hangar and machine shop. Lieutenant Harold A. Elliott has been placed in charge of operations at the Richmond Municipal Airport, at Fort Lee, Va., seven miles east of Richmond. The company has agreed to maintain at least three commercial planes at the field for local passenger flying. Mail planes bound north and east will be changed at this point.

At Greensboro, N. C., the company's operations are being handled by Pitcairn Aviation of North Carolina, Inc., Friendship, N. C. At this stop on the mail route the organization is operating the airport and conducting a flying service and school. The next stop is at the Spartanburg, S. C. Municipal Airport where operations are being handled by A. P. Kerr. Then comes Candler Field, Atlanta, Ga., the southern terminus.

At the Pitcairn Aviation Factory, Bryn Athyn, Pa., eight Pitcairn Mailwings, known as PA5s, with Wright Whirlwind motors, have been turned out for operation in the overnight air mail service. Their construction was described in detail in the November

issue of **AERO DIGEST**. Three airplane radio sets will be installed in the Mailwings to be operated over the New York-Richmond section of the New York to Atlanta air mail service. From the experience gained from their use the Pitcairn organization will base its plans for equipping all planes on the New York-Atlanta run with radio equipment.

THE University of Pennsylvania, Philadelphia, is the latest institute of learning to boast an aviation club, forty students having organized early in November and laid plans for the purchase of a monoplane and a Ruggles orientator.

E. Edward Felker, of Beaver Springs, a senior in the Wharton School of Commerce and Finance, was elected president of the club, which has the support of the Philadelphia Chamber of Commerce and officials of the University.

During November, membership has increased from 40 to nearly 100 students. The club's purposes are to arouse interest in the development of aviation among college students, to secure flying instruction and adequate ground training, to establish an aeronautical library, at the University of Pennsylvania, and to secure aviation experts to lecture before the club. Arrangements are being made for flying instruction at one of the airports around Philadelphia.

WHANDER FIELD, the new commercial airport of Reading, Pa., was formally dedicated Saturday, October 29. Thirty service and commercial planes took part in the ceremonies. The field is under the operation of Reading Airways, Allen K. Owens, director.

Ten thousand spectators traveled to the field, five miles from Reading, to participate in the dedication. Mrs. Owens, on behalf of her husband, raised the American flag, and John P. Wolfinger, chairman of the Reading Chamber of Commerce's Aviation and Airport Committee, delivered the dedicatory address.

Several dozen army and navy planes took part in the ceremonies. Among the commercial organizations that sent planes were the Shamokin Chamber of Commerce, Berwick Airways, Harrisburg Airport, Ludington Philadelphia Flying Service, Pitcairn Flying Field, Kreider-Reisner Aircraft Company, Reynolds Aircraft, Inc., Hazleton Chamber of Commerce and Lloyd Yost.

The port has a sixty by sixty-foot steel demountable hangar, gasoline and oil pumps, a machine and repair shop, and other necessary equipment.

Seaplanes will be able to land near Whander Field, the new municipal reservoir covering so much of the valley that planes with pontoons can use it as an inland landing station. The field proper covers fifty acres and can be enlarged if traffic warrants.

A REPORT by R. Sanford Saltus, jr., vice-president of the Ludington Philadelphia Flying Service, shows that more than 3,000 passengers were carried in the company's planes at the Philadelphia Airport between June 1 and November 1. The figures, do not include passengers taken on inter-city or distance flights.

Light your Airport

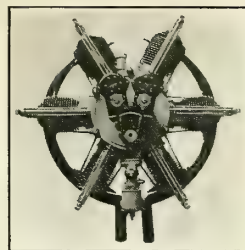
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AIRPORTS IN MIAMI

By R. V. WATERS

President Greater Miami Airport Association

MIAMI, Florida, has recently awakened to its possibilities as a national and international airport by reason of its geographical location, climatic conditions, rail, water and highway transportation facilities and natural conditions adapted to such purposes.

The Greater Miami Airport Association, whose duty it is to bring about Miami's aeronautic development, and the Miami Aviation Advisory Board, which officially represents the city in aviation matters, have been organized. J. E. Young, attorney and Army aviator during the war, is chairman of the Advisory Board. The Chamber of Commerce has an aviation department under chairmanship of Francis M. Miller. Other civic organizations, and municipalities surrounding Miami maintain similar committees.

The municipal airport for land planes is located on N. W. 54th Street, seven and one-half miles from the Courthouse, in the municipality of Hialeah. This temporary field has 180 acres and measures 1980 feet on the west line, 3300 feet south and 1336 feet east, with 1980 feet additional to be added if needed. Immediately south of 54th Street is a 200-acre emergency field and beyond the limits of Hialeah there are broad open areas of flat firm land for emergency landings.

This field on the west and south sides fronts main paved thoroughfares. Gas, water, telephone, electric lights, and trans-

portation to all sections of Miami are available. The center of the business section of Hialeah is but four blocks from the southwest corner of the field. This field is being acquired by the City of Miami under lease pending the construction of a permanent airport elsewhere. The field is level, smooth, and is well sodded. The city will construct hangars, rest rooms and other necessary facilities in addition to putting the field in as near perfect condition as it can be made. The Engineering Department of the General Electric Company is now working out the lighting plan for the field.

At the present time, seaplanes land in Biscayne Bay just south of the Miami Causeway. The facilities now offered are crude. However, Miami has taken a lease on a temporary seaplane base on one of the Venetian Islands now under construction which will be completed by the winter season. All facilities necessary for the convenience of pilots and planes and the traveling public will be provided.

The City of Miami, the County Commissioners and Miami Beach interests are working together upon a plan to establish in Biscayne Bay, probably at a point half way between Virginia Key and the mainland, a combined land and seaplane base. The water is shallow there and it is quite practical to fill in an island of about 200 acres and thereby create an ideal landing field for land planes with an equally appropriate and desirable base for seaplanes, practically immune from fog. The island will be connected with the city by bridge and causeway

either via Virginia Key and Miami Beach or direct to the mainland.

In Biscayne Bay there are many square miles of available space for landing and taking off. The Bay is a landlocked, protected body of water, of shallow depth, ranging eight feet and less; not so good for navigation, except for light draft boats, but excellent from the standpoint of marine aviation as it provides smooth water and shallow, safe water in the event of accident.

From an aeronautical standpoint, Miami is in her swaddling clothes. However, we expect to grow rapidly. For example, among our ambitions, in addition to a first class permanent airport, are the following: Re-establishment of air mail service; permanent Army, Navy and Marine air stations; permanent Naval units; Naval Reserve units; the sponsoring of air derbies or regattas; manufacturing or assembling of planes.

FLORIDA AIR NEWS

By NORMA DAVIS

WITH two airports completed and the construction of two others begun, southeastern Florida has busied herself lately preparing her place in the aeronautical sun as airport of entry to the United States from Latin America and potential link with northern fields.

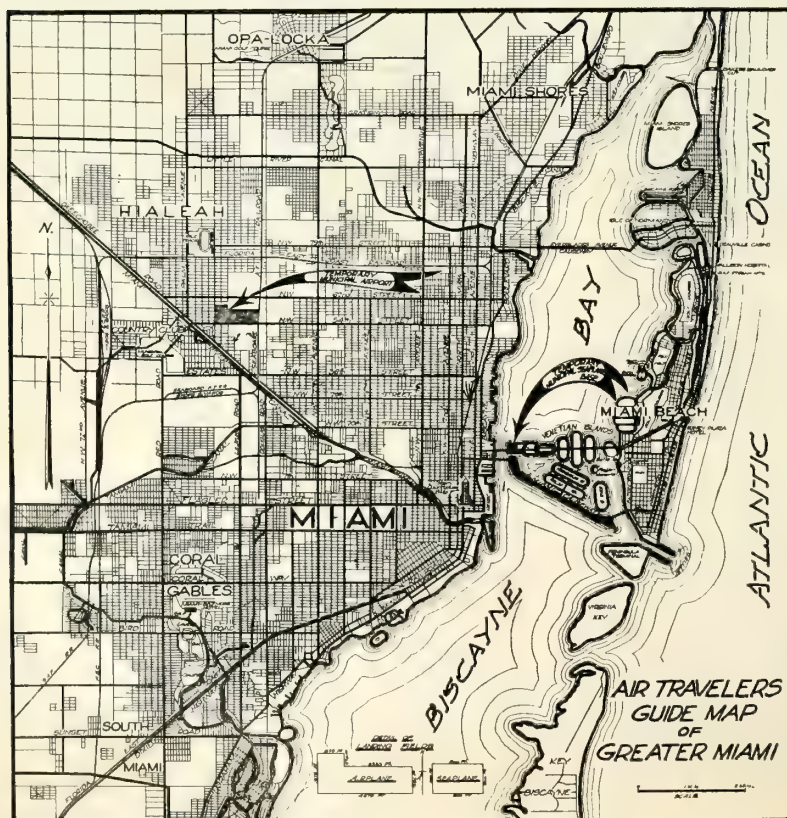
West Palm Beach and Key West have finished theirs, the former a municipal project which will be a strong competitor of Miami in the establishment of air mail connections unless Miami hurries with her city field. It is located on the Dixie highway a little more than three miles from the West Palm Beach postoffice.

The Pan-American Airways airport at Key West was completed recently for the installation of service between Havana and Key West. The field has two runways, each 2,000 feet long, affording a hop-off in four directions, and will have a concrete and steel hangar. The planes will be land machines equipped with flotation devices, radio and radio direction finder instruments tuned with beacons installed in the Key West and Havana stations. This company through its subsidiary, Atlantic, Gulf and Caribbean Airline Co., has announced plans for extending its service to Central and South American ports.

GEORGE E. MERRICK, founder of Coral Gables, has given an aviation field to the Southern Transport Aviation Co., Inc., south of Bird Road, providing the firm will use its influence to encourage other lines and individual fliers to use the field. Work will be started immediately to hard-surface the track with coral rock and to set out boundary markers and beacon and field lights. Power lights on the tower of the Miami Biltmore Hotel will serve as a beacon for night flying.

Three runways will be provided, two 1,800 feet long and 300 feet wide and a third 1,000 feet long and 300 feet wide. Hangars will be erected as needs require. Two houses for pilots, head mechanic and workmen are available now. The company plans to start

(Continued on page 736)





SIKORSKY Twin-Motored Amphibian

FOR those who have felt the handicap of insufficient landing fields, the Sikorsky Twin-Motored Amphibian affords the possibility of using the waterways for landings and take-offs in addition to the existing aerodromes.

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service between Miami, Jacksonville and Key West about January 1, according to the secretary, E. W. Hassler.

RESOLUTIONS asking that one-half cent from the state road and gasoline tax of five cents be used for the establishment and maintenance of aviation fields through the state recently were passed unanimously by the Greater Miami Airport Association.

The association is working now with Chambers of Commerce along the Florida east coast to form similar organizations to this in Miami or to organize city chapters of a state body for the promotion of Florida as an aviation center. Invitations of honorary membership have been extended to Domingo J. Milord, Cuban consul, and L. A. Oates, British consul, to assist in furthering Miami's-Latin American aviation contacts.

WILLIAM P. MACCRACKEN, Assistant Secretary of Commerce for Aeronautics, who was in Miami November 10 as the principal speaker on Commercial Aviation at the dedication of the Miami Coliseum, looked with favor on Miami's chances for commercial connections with New York through Atlanta.

Harold F. Pitcairn of Pitcairn Aviation, Inc., Philadelphia, was in Miami at the same time on an inspection of the city's airport facilities. His visit was made with a view to bidding on the government air mail service between Miami and Atlanta. His company already holds the contract for mail service between Atlanta and New York. Mr. Pitcairn was accompanied by G. F. Childs, general manager, and James G. Ray, operations manager.

H. H. BROOKS, general sales director of the Marmon Motor Car Co., arrived in Miami November 7, on one lap of his aerial tour of all states east of the Mississippi River. The plane, a Stinson-Detroiter four-passenger model, was piloted by Capt. J. N. Kelly, former Miami-Atlanta air mail pilot, and R. J. Barbin. G. W. Estaver, Jacksonville Marmon distributor, was a passenger.

MIAAMI'S chance of becoming a focal point on an air mail route between New York and the West Indies looms as almost inevitable with the action of Postmaster General Harry S. New asking for bids for the establishment of a route between Atlanta, Ga., and Miami, and the request of south Florida for the inauguration of air mail service between Miami and Key West.

The Atlanta terminal will link with the line from that city to New York, while the Key West-Miami route would complete an important lap in the air journey between Florida, Cuba and the West Indies, where the West Indian Aerial Express Co., is already in operation for the winter. The Key West-Miami connection is looked upon favorably by citizens of this section as a means of speeding air mail service between Havana and Miami, where the mail would, under ordinary circumstances, be taken to the air again after a train ride from Key West.

CAPITAL AIRWAYS, Inc., Washington, D. C., has applied to the Miami Beach city council for 40 feet of docking space at the new municipal docks as headquarters for three twin-motored flying boats to ply between Miami Beach and Nassau, Bimini and Havana. This line would be operated between December 1 and April 1. Robert E. Funkhouser, president of the company, announced his wishes for an anchorage base south of the country causeway for the landing of passengers, if the application is approved.

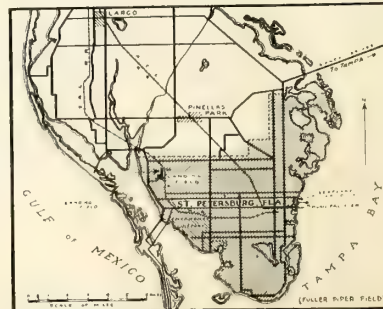
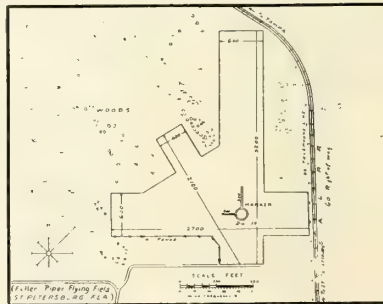
NEGOTIATIONS are under way by Clayton S. Sager, secretary-treasurer of the Milwaukee Air Transit, Inc., the city of Hialeah and the Hialeah Chamber of Commerce to establish on the present 54th Street flying field a small airplane factory and a flying school.

ST. PETERSBURG NEWS

By JOHN LODWICK

A \$5,500 hangar, expert mechanic service and a high grade fuel station has been approved by the city commission for the St. Petersburg, Florida, municipal seaplane base and will be put into commission in the immediate future. The commission has also authorized the expenditure of \$8,000 for a hangar at Piper-Fuller field, St. Petersburg's airport, where mechanic and fuel service will also be provided. Quarters for pilots are to be built at a later date.

The airport has been completed for several months, as has the seaplane base, and both have been given enthusiastic praise by Army and Navy fliers who were present at their dedication, but it is only recently that improvements for the field and base have been approved following constant agitation on the part of the St. Petersburg Aero Club.



St. Petersburg's airport, Piper-Fuller Field, and municipal seaplane base

The seaplane base is on the north mole of the yacht basin in Tampa Bay in the heart of the resort hotel section and is presided over by Johnny Green, a veteran flier who has operated his flying boat *Sunshine* here for 10 years.

The airport is in the northwest section of the city, a half mile from the Jungle Country Club Hotel where quarters are available at the present time for visiting airmen. There are tram connections to the heart of the city which is six miles away. With its standard markings of a 150-foot circle it is easily located from the fact that on the west is Boca Ciega Bay and to the east is the Seaboard railroad. The Aero Club has painted a gigantic arrow on the top of the Detroit hotel pointing the way to the air field.

Lighting equipment for night flying has not been installed but will be, city officials declare, as soon as traffic warrants. Agitation for the resumption of an air mail route from Atlanta to Miami through Tampa and St. Petersburg is being made and if St. Petersburg is made a stop, lighting equipment will be put in.

The airport is "L" shaped having three runways marked with arrows. They are 2,100, 2,700 and 3,100 feet in length. The field was used last season by the eight-passenger planes of Florida Airways, Inc., in carrying passengers on short flights. It is leased and operated by the city and is located, Longitude, 27 degrees, 45 minutes; Latitude 82 degrees, 44 minutes and is 22 feet above sea level and well drained. Magnetic variation at the field is 2 degrees, 25 minutes in 1928 with an annual increase of 1 minute.

AIR MAIL BID AWARDED

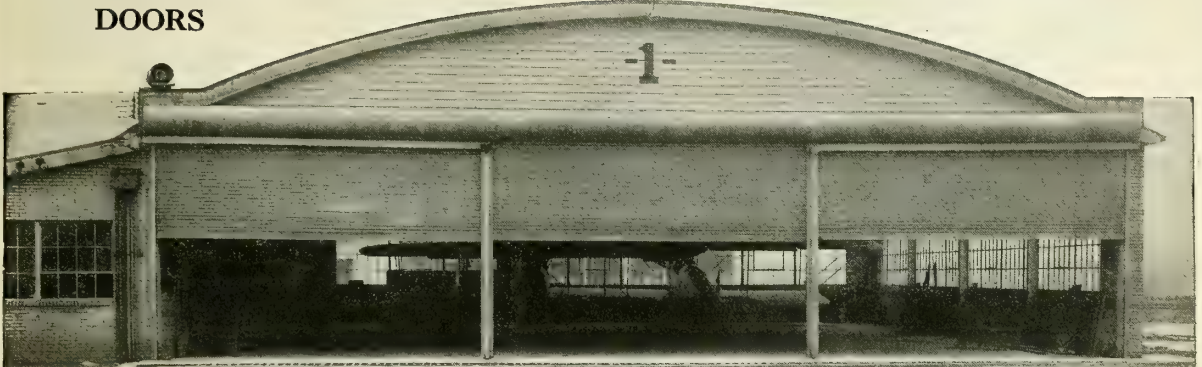
THE PITCAIRN AVIATION, Inc., of Philadelphia, Pa., was the lowest of three bidders for the operation of an air mail route from Atlanta, Ga., via Jacksonville to Miami, Florida, and return. This concern agreed to carry the mails over this proposed route for \$1.46 a pound. Provision will also be made under the terms of the contract to supply Tampa, Fla., with a feeder route, if necessary.

The two other bids received were from the Southern Transport Aviation Company, of Miami, Florida, at \$1.74 a pound, and the Southeastern Air Lines, Inc., of Jacksonville, Fla., at \$1.95 a pound.

OUR BALLOON RECORDS RECOGNIZED BY F. A. I.

THE F. A. I. have officially recognized E. J. Hill and A. G. Schlosser as holders of the world's duration record of Class A spherical balloons for their flight from Detroit to Montvale, Va., in the Gordon Bennett balloon race last July. They were in the air 26 hours and 46 minutes.

S. A. V. Rasmussen's flight from Detroit to Hookerstown, N. C., a distance of 572 miles, was recognized as the world's distance record for Class A spherical balloons.

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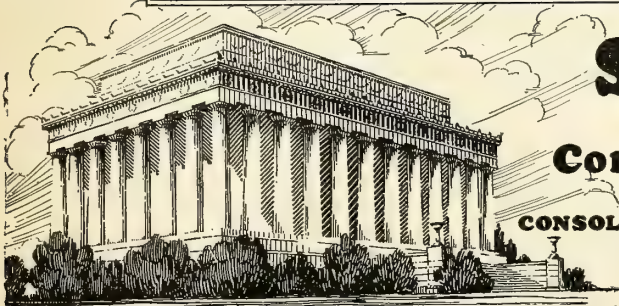
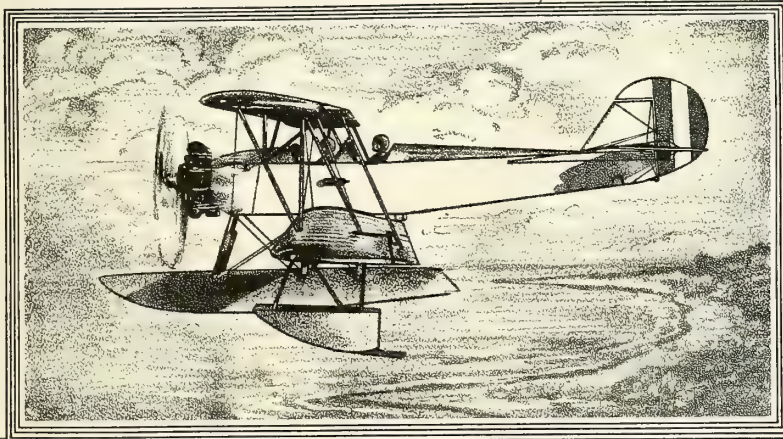
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TEXAS AIR NEWS

By MONT HURST

ACORDING to Cosme Hinojosa, Postmaster-General of Mexico, air mail and passenger service will be started in January, 1928, between Mexico City, Vera Cruz, Progreso and the United States border. It has been rumored for some time that mail service would start between certain Mexican cities and the border, but official confirmation has been lacking to date.

A. B. SPENCER, manager of the Fort Worth Chamber of Commerce, and C. A. Winder, supervisor of Public Utilities of that city, have requested Governor Dan Moody to submit to the next session of the State Legislature a bill requiring all aviators to have a State license for themselves and their planes. The law would require aviators to present a Federal license before they could get a state license, and all planes would have to be inspected.

IT is reported that a new air mail and express line will be put into operation between Dallas and Los Angeles. The new line will probably make stops at San Diego, Yuma, Phoenix, Tucson, El Paso, Pecos, Abilene and Dallas. In addition to mail and passengers it is proposed to carry express. It is said that this line would shorten the air mail time from coast to coast by four hours. Major Howard F. Wehrle, of Kansas City, is said to be organizing the new line.

C. B. Braun, division traffic manager in Dallas for the National Air Transport, Inc., has gone to New York City to take temporary charge of that office. He has been the manager in Dallas for a year and a half and will manage the New York office until a manager is selected. The offices in Dallas will be in charge of J. C. McDermott and Miss Edwena Harris.

ALTHOUGH the final arrangements for the purchase of Love Field in Dallas have not been perfected, it is thought that things will be worked out satisfactorily to all parties concerned. All hangars at the field are in use and many planes are at the field. Passenger carrying is popular and the public is becoming more interested in the air business.

DUDLEY MAYER has been elected the new president of the Dallas Flying Club, succeeding B. B. Owen. Mr. Mayer is a veteran flier and was an instructor during the war. Other new officers elected were: Tom Hardin, first vice-president; Roy Cowan, second vice-president; Garza Wooten, secretary-treasurer.

A reception was tendered by the club on November 5, at Cliffdale Country Club, honoring Lieut. Harry Weddington and Mrs. Weddington. Lieut. Weddington is the new officer in charge of air reserves in Dallas.

THE organized air reserves of this district began operations on October 30 at Love Field. Training was held under Lieut. Harry Weddington. The unit is the 366th

Observation Squadron and is in command of Major Josef Noyes. He is associated in the command by Lieut. Weddington and Lieut. Tom Hardin. There are 176 corps reserves in this district and much activity is expected. Byron Good is one of the instructors.

FIRE destroyed the repair and assembling shop of J. L. Schroeder in Houston, Texas, on October 18. The loss was \$20,000.

THE Chamber of Commerce of Pecos is building a landing field at that place. The field will be marked for landing and is situated a mile southwest of the town. A huge arrow directs the flier to the location of the field. Other fields are being contemplated, among them one in Denton.

AN arrow is being constructed on the roof of the Wholesale Merchants Building in Dallas to guide aviators toward Love Field. The arrow will be visible at 2500 feet in the air and the words "Dallas" will be alongside the arrow. The letters will be on a space measuring 100 feet by 32 and the arrow will be 50 by 12. Flood lights will be installed upon the water tank on the roof which will illuminate the marker at night.

THREE Dallas fliers recently made a "good will" tour to various Texas cities to boost airports, air mail and air transportation lines. The flight was made in the Stinson-Detroit Department of Commerce plane of Parker D. Cramer, federal air inspector in this district. Those making the trip were: Parker D. Cramer, Dudley Mayer, president of the Dallas Flying Club, and B. E. Owen, former president. San Antonio, Austin, Houston, Waco, and Galveston were some of the cities included in the trip.

BUSINESS men in Waco are trying to arrange for their city to be made a junction point for the air mail and passenger lines out of Dallas and Fort Worth. They wish to have the planes make a stop about midway between Dallas and Fort Worth and to have Dallas and Fort Worth connected to the line by auto truck service. They propose to have the Dallas and Fort Worth planes fly to Waco and make connections with other planes from South Texas airlines.

EFFORTS are being made in Austin to put the flying field at that place under the ownership of the city. Municipally-owned airports are becoming popular in this section and the field at Austin is nicely located, has one hangar, and several fliers are located in that city. One young man paid his way through the State University there by carrying passengers and doing other commercial flying after school hours. Austin is located on the route of the proposed airlines to Mexico.

COL. W. E. EASTERWOOD, jr., has doubled the cash prize offer for a flight from Dallas to Hong Kong. The prize offer is now \$50,000. Col. Easterwood has also offered to finance some recognized aviator of merit and will give \$25,000 if the flight is made in three hops.

GEORGIA AIR NEWS

By AL MAJOR

AUGUSTA, Georgia, on October 28, formally opened its municipal airport, Daniel Field, named in honor of Mayor Raleigh Daniel.

The service airplanes that flew to Augusta for the opening were: three Curtiss Hawks from Hampton Roads, Va., under command of Lieut. G. R. Henderson; four Curtiss Hawks, three with Pratt and Whitney Vap motors, under command of Major C. A. Lutz of the Marine Corps; three bombers under command of Captain C. E. Rust; three Douglas observation planes from Maxwell Field, Ala., under command of Major Weaver; the Air Corp Tactical School from Langley Field, Va., under command of Major W. H. Frank, consisting of twelve pursuit Curtiss Hawks, 16 observation planes and one Douglas transport, the Army blimp TC-10, under command of Capt. Clark. The Army, Navy and Marine pilots gave a splendid account of themselves by their wonderful executions, much to the delight of everyone.

The activities lasted two days and about 40,000 people witnessed the maneuvers. Col. C. H. Danforth, air officer of 4th Corps Area, Lieut. Lester J. Maitland and Assistant Secretary of Commerce MacCracken flew to the dedication.

An Eaglerock of the Major Aircraft Co., Candler Field, Atlanta; the Fairchild monoplane that has been doing commercial photography for some time from that field, belonging to Brock and Weymouth of Philadelphia; and the Swallow of the Augusta Division of the South-eastern Airways that is doing student work were among the commercial planes flown to the opening.

The city council has already let the bids for the complete lighting of the field so that it will pass all the requirements of the Department of Commerce for an air mail airport by January 1st, 1928. Several large buildings are marked with the words "Augusta, Ga." and arrows pointing to the field. There are gas, oil, supplies and storage to be had at the field, which is located only six miles from the heart of Augusta.

If the splendid reception shown the visiting pilots is a sample of Augusta hospitality we wish they would have an opening every week.

ATLANTA is known as the railroad crossroad of the southeast and is fast becoming the airline crossing of the southeast. Hardly a day passes without a visiting ship.

Pitcairn Aviation, Inc., the air mail contractors for the Atlanta-New York route and the successful bidders for the Atlanta-Miami route now have two Orowings on the field for passenger and student work.

The lighting of Candler Field will be completed early in December and we expect to have a big celebration in honor of the occasion. Visiting pilots can secure gas, oil, repairs, storage and food on the field and lodgings are close by.

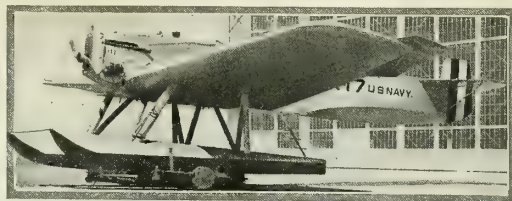
Colonel Charles Danforth, Fourth Corps Area air officer is coöperating with W. B. Hartsfield, head of the city's aviation committee, in planning the celebration.

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Entrants in the Southern Michigan Model Plane Contest at Battle Creek

Top row, left to right, Wilbur Bodell, Battle Creek; Ernest McCoy, Detroit; William Chaffee, Detroit; Ford Grant, Detroit; M. Hamburg, secretary of Airplane Model League of America; Jack Loughner (holder of indoor model plane records), Detroit; Howard Munshaw, Lansing; Robert Allen, Battle Creek. Bottom row, Clifford Bennett, Kalamazoo; Bernard LeBlond, Battle Creek; John Sheehan, Robert Syer and Charles Money, Battle Creek.

THE MICHIGAN MODEL AIRPLANE CONTEST

YOUNG aviation enthusiasts gathered from various parts of central and southern Michigan on October 22 at Battle Creek to take part in the model airplane meet sponsored by a newspaper and civic organization of that city. An assortment of flying and non-flying models of practically every type plane on the American market today, and ranging in size from a wing spread of four inches to six or seven feet, exhibited proof of the interest displayed by the youths in their preparations for competition in the contest.

The sweepstakes silver loving cup donated by Carl Laemmle, president of Universal Pictures Corp., and one of the most coveted trophies in events of this nature, was won by Robert Syer of Battle Creek for the best all-around performance of his flying model, best workmanship, completeness of design, flying ability and promptness of operator in trials and official flights.

Jack Loughner of Detroit, winner of the 1926 and 1927 world's record for indoor duration and distance model flights made at Memphis and Atlantic City, was the largest prize winner, taking first in both duration and distance flights in the experienced division (boys who have participated in previous contests), his model remaining in the air for one minute and 19 seconds and traveling a distance of 1,600 feet. The world's record hung up by Loughner for duration was two minutes and 31 seconds.

The non-flying model which attracted the major amount of attention was a replica of the *Spirit of St. Louis*, entered by Howard Munshaw of East Lansing, and which took first prize in the inexperienced division, senior (boys 14 to 20 years who have not participated in any model contests). The model was built to scale and, in addition to an electric motor, boasted a complete working set of controls and control surfaces.

Another model which attracted considerable attention was a huge transoceanic mono-

plane model, a multi-motored ship designed to carry 100 passengers.

Winners of the various events in their respective order were:

FLYING MODELS (Experienced Division)

Duration

Jack Loughner (Detroit), first, time—1 min. 19 sec.; Ford Grant (Detroit), second, time—47.4 sec.; Ernest McCoy (Detroit), third, time—20.2 sec.; William Chaffee (Detroit), fourth, time—18.2 sec.

Distance

Jack Loughner (Detroit), first, 1,600 feet; Ford Grant (Detroit), second, 757 feet; Ernest McCoy (Detroit), third, 250 feet; William Chaffee (Detroit), fourth, 173 feet.

NON-FLYING MODELS

William Bodell, Battle Creek, first and second, (only entries in division).

FLYING MODELS

(Inexperienced Division, Senior)

Duration

Robert Syer (Battle Creek), first, time—10.4 sec.; Charles Money (Battle Creek), second, time—5.4 sec.; William Bodell (Battle Creek), third, time—3.2 sec.

Distance

Robert Syer (Battle Creek), first, 300 feet; Charles Money (Battle Creek), second, 155 feet; William Bodell (Battle Creek), third, 82 feet.

Gliders

Charles Money (Battle Creek), distance 30 feet, duration 3 sec. (no other entries).

NON-FLYING MODELS

Howard Munshaw (Lansing, East), first; Lester W. Clark (Battle Creek), second; Willis Everson (Battle Creek), third; Tom Hooper (Battle Creek), fourth.

FLYING MODELS

(Inexperienced Division, Junior)

Duration

Bernard LeBlond (Battle Creek), first, time—4.6 sec.; John Sheehan (Battle Creek), second, time—2.8 sec.

Distance

Bernard LeBlond (Battle Creek), first, 60 feet; John Sheehan (Battle Creek), second, 28 feet.

NON-FLYING MODELS

Theodore Houghtaling (Battle Creek), first; Robert Reynolds (Battle Creek), second; Arthur Kimball (Battle Creek), third.

The contests are open to all boys under twenty years of age, but classifications are made as to age and experience in fairness to the boys who are just entering this educational sport. It is not essential that the models entered in these contests be constructed according to any special plans or designs.

The officials and judges for the meet were Luton S. Knowles, member of N. A. A. contest committee (referee); E. A. Goff, president of Michigan Aircrafts' Association; J. Felix of the Davis & Felix Airways of Battle Creek and A. A. Welch, Battle Creek business man.

A notable figure appearing at the meet, and who is directly responsible for many trophies captured by Jack Loughner of Detroit, was Merrill Hamburg, formerly instructor of manual training in the Detroit public schools. Mr. Hamburg, now secretary of the Airplane Model League of America, conducts the Airplane Model Department of the *American Boy* magazine, Detroit. The Airplane Model League has grown to be one of the most important model organizations in the country, due largely to the capable guidance of Mr. Hamburg.

MICHIGAN AIR NEWS

By G. W. HAWKINS

ANOTHER step in the advancement of air mail service throughout the United States has been practically established following a tour of the principal cities of Michigan by Major J. A. Connors, president of the United Airways, Inc., of Detroit and Don Harris, assistant manager of the same firm, during which time they have outlined to the city, post office, express and civic organization officials of each municipality, their plans for the inauguration of air mail, express and passenger service on a six-day schedule starting January 1, 1928.

Starting from Detroit, the terminal point for the newly proposed routes, Major Connors and his party in a Buhl 5-passenger Air Sedan piloted by Louis G. Meisner of the Buhl Aircraft Company of Marysville, Michigan, covered the following cities in their respective order and as they will be visited on the new routes: Ann Arbor, Jackson, Battle Creek, Kalamazoo, Grand Rapids and Lansing on one route, and Bay City, Saginaw and Flint on the other route.

Plans for the service as outlined by Major Connors to the officials and commercial organizations in these cities call for a plane leaving Detroit at a given time each forenoon, picking up mail at the various cities on the first route mentioned with the last stop at Lansing about 4 p.m., the plane arriving in Detroit at the Ford airport shortly before 5 p.m. and the mail turned over there to a distributing office which is to be established by the Post Office Department. There the mail for the east and west transcontinental air mail lines would be separated and the pouches loaded into a "shuttle" ship

(Continued on page 742)

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which would take the cargo into Toledo where it would catch the east-bound mail ship to New York and other points on or near the Atlantic coast, and the west-bound ship to the terminal at San Francisco and points in between including Chicago, Omaha and Dallas. The "shuttle" ship would also pick up the incoming mail from the east and west lines and bring it into Detroit for distribution throughout Michigan.

Another ship operating on the Bay City-Detroit line would work on practically the same schedule, making a total of three ships operated by the United Airways.

Wherein previously air mail from Michigan cities outside of Detroit has been "trained" through for connection with the main lines at Toledo, at a considerable loss of time at terminals, it now will be possible for one to mail a letter in any of the cities covered on the two routes previous to mid-afternoon and the letter will be in New York, Washington, Boston, Philadelphia and other air mail terminals for early morning delivery. The same time-saving will be effected in letters addressed to mid-west cities. Letters to San Francisco and surrounding cities will be delivered within 24 hours after they are mailed in the Michigan cities.

Passenger service rates for the proposed routes have been set at ten cents per mile, including transportation to and from the downtown sections to the airports of the various cities. Express rates are yet to be determined.

The majority of the cities on the two routes have already established airports, and are rushing improvements upon them to make them conform with regular air mail fields. Flood lights are to be installed on most of the fields at an early date, and the balance of the fields within a reasonably short period of time.

WILLIAM BROCK and **Edward Schlee**, co-pilots of the *Pride of Detroit*, brought their famous Stinson monoplane to the dedication, on October 31, of the Capital City airport, Lansing, one of the finest fields in Michigan. Greeted at the field in the afternoon by a crowd of officials and enthusiasts, numbering over 3,000, who were unanimous in acclaiming these heroes of the

air. As a fitting climax to the ceremonies of the afternoon, the fliers were guests at a banquet at the Hotel Olds attended by more than 300 persons.

The message conveyed to the banqueters by all of the speakers of the evening was that of safe, sane and practical flying as it exists today, after years of pioneering, and of the importance of commercial aviation.

Told in the terse language of the adventurer and savoring of romance of the olden days when skippers sailed the Seven Seas in Yankee clipper ships, Schlee related in detail the adventures encountered on the Detroit to Tokyo flight. Fog banks, sleet, rain and darkness was the summary of their hop across the Atlantic to Croyden, England; thence to Le Bourget, Munich, and Belgrade; over and through unknown mountain passes to Constantinople; through monsoons to Calcutta and Rangoon; over jungles and through more monsoons; lost in the wilds of China; Japan, where Schlee was taken for a United States Army officer and Brock for a spy; finally Tokyo and a flood of letters, cablegrams and every other form of message from the States pleading with them to abandon their hop across the Pacific.

That, in brief, was the exhilarating picture Schlee brought to his listeners of a flight added to the list of pioneering feats in the cause of promoting commercial aviation.

Carl B. Fritche of the Aircraft Development Corporation of Detroit was another interesting speaker. Convincingly he told of the safe and sane side of aviation, of the excellent record of Ford transport ships and of the National Air Transport.

Brock spoke briefly paying tribute to the progress which has been made in Lansing in establishing an airport, and terminating his talk with the plea that Schlee was the orator of the two.

Other speakers and guests of honor who participated in the program were Capt. Ray Collins of the Union Trust Company of Detroit, referee for the National Air Tours, Lieut. Egan of the First Pursuit Group from Selfridge Field, and Harry McDonald, vice-president of the Arctic Ice Cream Company of Detroit. Mr. McDonald, capable singer and entertainer, kept the spirit of the event enlivened with songs and jokes.

Among those present were: Lieuts. Stowe

and Schoenlein, pursuit fliers; E. A. Goff, president of the Michigan Aircrafts' Ass'n and associated with the Stinson Aircraft Company of Detroit; E. G. Knapp and Dick Youngs of Ypsilanti, the former state agent for the Ryan and Waco planes; Don Parthey and J. Luthey of the Lu-The Flying Service, Jackson; George Francis, Flint commercial pilot; and Talbert Abrams, president of the ABC Airlines; Lieut. Edward Preston, chief test pilot for the Driggs Aircraft Corporation and associated with the Foster Airways, Inc.; Austin R. Narrin, airport manager and chief pilot for the Foster Airways; Arthur J. Davis, commercial flier, and "Ole" Olson, chief pilot for the Tyler Airways, all from Lansing.

Hugo B. Lundberg, treasurer of the Driggs Aircraft Corporation and president of the Lansing Chamber of Commerce, acted as master of ceremonies for the evening.

A DRIGGS Dart II, manufactured by the Driggs Aircraft Corporation of Lansing, Mich., was recently flown from this city to Worcester, Mass., an approximate distance of 800 miles, in 9 hours and 40 minutes of actual flying time, and with a load consisting of the pilot, C. P. Olson of Lansing, the owner of the plane, James P. Whittall of Worcester, together with baggage and emergency fuel. During this trip, in the worst possible kind of weather in many instances, the Dart II performed exceptionally well.

News of the granting of the Approved Type Certificate No. 15 by the Department of Commerce has been most enthusiastically received by both the officials of the company and the dealers throughout the United States, Canada and Mexico.

AIR MAIL CONTRACT

THE Embry-Riddle Company, Cincinnati, have been awarded the contract to operate the Chicago-Indianapolis-Cincinnati air mail service. This service, beginning about December 15, will place Cincinnati about twenty-four hours nearer the Pacific Coast.

CINCINNATI AIR NEWS

By WALLACE FORSTE

THE building of aircraft safety devices is proposed by the Safe Aircraft, Inc., of Cincinnati, recently incorporated by the Ohio Secretary of State with capitalization set at \$200,000. The incorporators were E. F. Lunken, president of the Lunkenheimer Company; John W. Pattison, vice-president of the Union Central Life Insurance Company, and Victor Heintz, attorney.

Mr. Lunken stated that the company would engage in the manufacture of air safety devices, including a parachute devised by Major E. L. Hoffman, former commandant at Lunken Airport, for landing disabled planes. Further details will be given soon, Mr. Lunken said. Major Hoffman, well known for his aviation developments, especially in parachutes, has been working on his latest device for many months.



Officials of United Airways tour principal cities of Michigan

Don Harris, asst. mgr. of the United Airways; Louis G. Meister, pilot of the Buick Air Sedan in which the tour was made; Major J. A. Connors, pres. of the company and also head of the Detroit Flying Club, and Don Hanselman, traffic manager of the United Airways.

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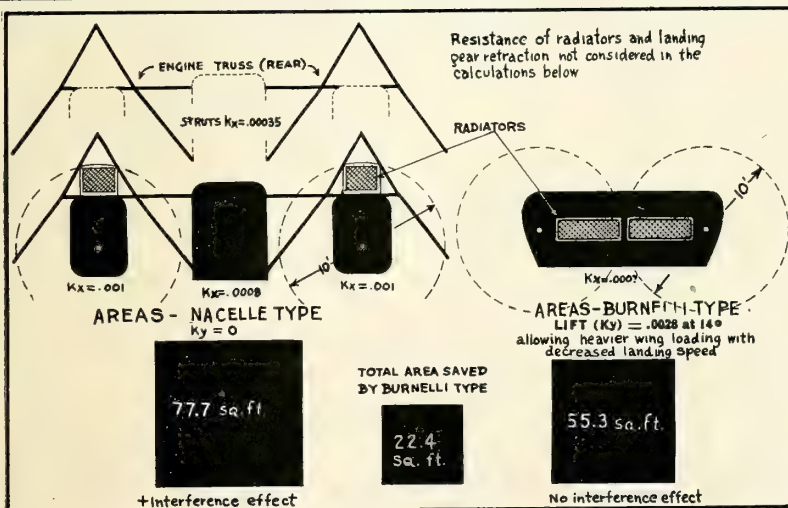
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CLEVELAND AIR NEWS

By DAVID E. IRWIN

A PERSONNEL of 60 is to be taken on the intended South Pole flight next August or September of Commander Richard E. Byrd.

Visiting Cleveland recently to give several lectures, Byrd said that Floyd Bennett, his companion on the other pole flight, and many World War veterans would be in the party.

The explorers will go by boat to the fringe of the great unmapped areas and from that point will proceed by airplane. One plane is to be trimotored and the two others of smaller type. A number of Eskimos from the frozen north will make the trip to the other tip of the world with 60 dog teams.

"To my knowledge," Byrd said, "This will be the first time that Eskimos from the arctic regions have been taken into the antarctic regions."

"The same men who accompanied me on the trip to the North Pole and on the flight across the Atlantic will be with me on the expedition."

Byrd in his various lectures talked on his flight over the North Pole and the trip across the Atlantic which ended in the breakers at Ver-sur-Mer, France. The polar flight was illustrated with pictures taken by the party. He was greeted here by Mayor John D. Marshall; Floyd J. Logan, president of the Cleveland N. A. A., and Major Thomas J. Herbert, commanding officer of the Ohio National Guard air unit.

CLEVELAND AIRPORT, which has been using the radio station of the coast guard unit here, is to have its own station. The Department of Commerce has authorized installation of a radio beacon, telephone and telegraph station.

The National Air Transport, operators of the New York-Cleveland air mail route, is planning to equip its planes for radio reception. Use of radio beacons is expected to aid materially in flying over the Allegheny Mountains.

MARTIN THOMAS and Elmer Dryer, Army pilots during the World War, returned a favor during the November election campaign. Municipal Judge Francis L. Stevens aided the pair to qualify as pilots 10 years ago and in return they distributed campaign literature by airplane, the first time a political attack was made by air here.

AIRPLANES are soon to be inaugurated here to combat rum runners, Arthur P. Fenton, collector of customs in this district has announced. The planes will cooperate with coast patrolmen.

A PUBLIC SCHOOL practical course in aeronautics is to be included in the curriculum at Cleveland East Technical high school. F. L. Smith, instructor in automotive theory, and A. R. Roethlisberger, principal, will be tutors. Study of materials, laboratory work, and assembling and dismantling of planes are included.

ASSISTANT Secretary of War MacNider flew to the convention of the Reserve Officers Association at Milwaukee in his Curtiss Falcon, *The Spirit of Unrest*, piloted by Capt. R. G. Erwin. He stopped off at Cleveland airport to refuel.

FLOYD J. LOGAN, Cleveland manufacturer of airplane accessories, has been elected president of the Cleveland chapter of the N. A. A. He succeeds Major Thomas J. Herbert, recently elected to office in the state organization.

THE Willard Parker Aircraft Co., of Cleveland, has announced the introduction of a new sport model, one and two passenger biplane. The two new models will be powered with 5-cylinder Anzani radial air-cooled engines. Willard Parker, president of the concern, is an airplane engineer and former member of the British Royal Air Force.

OPENING of the Cleveland-Cincinnati-Louisville air route, scheduled for next spring, will give overnight air service between Chicago and New York and southern Ohio cities through a hook-up with the transcontinental line at Cleveland.

The schedule as it now stands will save 16 hours in a one way trip from New York to Louisville. The route provides stops at Akron, Columbus and Dayton and covers 339 air miles. Beacons are being placed every ten miles with intermediate fields every thirty miles between cities. This work is expected to cost the government \$125,000. Lack of a municipal airport at Cincinnati necessitates use of Major Hugh Watson's field there. Main offices of the concern are to be at Cincinnati.

CLARENCE D. CHAMBERLIN, of New York-to-Germany fame, urged Akron, O., business men to construct a municipal airport, in a recent address. He made the trip from New York through a blinding snow storm, accompanied by Mrs. Chamberlin, Miss Thea Rasche, noted German aviatrix and a friend, George Burns. Following the address he visited Cleveland municipal airport and then continued to Detroit.

EDDIE STINSON, World War ace and head of the Stinson Aircraft Co., of Detroit, Mich., hung up a new record for the Detroit-to-Cleveland trip, November 9, when he made the hop in 49 minutes. William A. Mara, secretary of the company and John Witacker, of the Tidewater Oil Co., were with him.

GOVERNMENT movies, taken at Dayton, O., showing newest types of military planes in action, were shown recently to Reserve and Ohio National Guard air unit officers. The officers were the guests of the 112th Observation Squadron of the Ohio guard, the only air unit in the state. After the movies and talks by Major Thomas J. Herbert, commander of the 112th, and Lieuts. A. C. Cummings, H. E. Dugan and Capt. M. F. McQuilken, the party went on an inspection tour at the Cleveland airport.

BALTIMORE AIR NEWS

By EDWARD JOHNS

FLYING was suspended by the Air Corps, Maryland National Guard, early in November and the squadron now meets in its winter quarters, Richmond Market Armory. Technical problems and theoretical subjects are being taught each Tuesday night. Officers may fly on Saturdays or Sundays if they wish but the squadron will hold no further formations at Logan Field until spring.

Before washing out for the winter, the Marylanders completed a photographic mission of mapping from the air every established and emergency landing field that lies between Baltimore and New York. Lieut. Lyman Patterson, Major William D. Tipton, Capt. Charles A. Masson and Master Sergt. Charles H. Craig performed the work.

The Logan Field fliers joined the Armistice Day parade through Baltimore.

OTTO MELAMET, first lieutenant in the National Guard air service, has bought two Canucks, rebuilt and federally examined, and has received permission to use a field to the north of Baltimore, near the junction of Old Court Road on Park Heights Avenue. He is carrying passengers, giving instruction and operating a taxi service.

THE Airport Commission in November handed to Mayor William F. Broenning a list of fourteen possible sites for Baltimore's new \$1,500,000 airport, which was voted through in the last election. The site said to be most favored is now under water, and will have to be filled by dredging.

Fliers of the city especially favor this site as it is within the city limits and only ten minutes by street car from the heart of the downtown district. If it is selected, a four-way field for land planes will be provided and all of the Patapsco River is available to water aircraft. The river is several miles wide, having a tide range of eighteen inches and a flow of .9 knot.

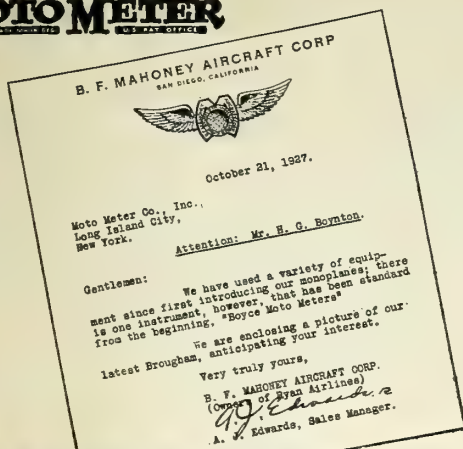
Logan Field, now used as an air field, is situated unhandily and in addition is owned by the Bethlehem Steel Company. That corporation has demanded the field for home sites for its employees, and has stated that when the present lease expires it cannot be renewed. Two ditches have been dug across the field and sewer pipes laid.

If the water site is chosen, three years will have to be allowed for settling; but in spite of that handicap it is by far the most choice place, it is said.

AIR MAIL BIDS ASKED

PROPOSALS have been invited for the transportation of air mail under contract as follows: *Great Falls, by Helena and Butte, Montana and Pocatello, Idaho, to Salt Lake City, Utah and return.* Distance each way approximately 493 miles. Bids will be received at the Post Office Department in Washington until 12 o'clock noon, December 28, 1927.

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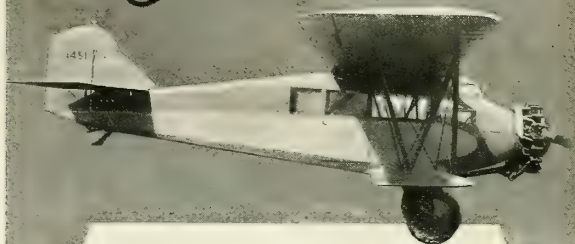
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INDIANA AIR NEWS

By R. W. KELLUM

INDIANAPOLIS has a new aviation organization. It is the Merz Engineering Company, formed for the manufacture and development of high efficiency airplane motors. Its work first will be on a laboratory research basis. Later a large production program is anticipated.

The new concern is fully equipped with machinery from the old H. C. S. organization but it is announced that additional equipment also will be acquired. Articles of incorporation filed bear the following names of prominent Indianapolis backers; Fred Dickson, president of the Indiana Trust Company; Reily Adams, president of the Security Trust Company; Fred Moskovics, president of the Stutz Motor Company of America; Douglas Wheeler, president of the Wheeler-Schebler Carburetor Company; Norman A. Perry, president of the Indianapolis Power and Light Company; John T. Cannon, president of the Best Grand Laundry; A. Gordon Murdock, president of the Murdock Pump Company; Rufus Syfers, real estate man; H. J. Raffensberger, formerly vice-president of the Kothe-Wells-Bauer Company, and Mr. Charles G. Merz, formerly treasurer of the H. C. S. Cab Company and engineering expert.

It is understood that the plant formerly used by the H. C. S. company in the city is available for the airplane motor operations but it is not known at present whether this or other buildings will be taken over.

Mr. Merz will be general manager and Mr. Raffensberger will have direction of the financial affairs. Mr. Merz has had wide experience in the motor industry, in the racing game and in the production field. At the time of the World War he was assigned by the government to the command with the rank of captain of the American concentration point in Romo-Ratin, France, for the building and rebuilding of all motors used by the American aviators. He had 2,000 men under his command working night and day. The shops had more than thirty different types of engines to repair. He was later advanced to the rank of major.

Before entering the manufacturing end of the business, Mr. Merz more than twenty years ago was a pioneer in racing. He has been connected with the National Motor Car Company, the Stutz Motor Company, the Rayfield Carburetor Company and the H. C. S. Company.

"Aviation now is just where the automobile was fifteen years ago," Mr. Merz said. "I entered the automobile field when it was in its infancy and have seen it grow to its present enormous proportions. The same future and prospects are predicted for aviation."

THE first convention of National Guard air officers was held at St. Paul recently. The next meeting is scheduled for the fall of 1928 at Hot Springs. The purpose is announced as an effort to boost National Guard aviation in every way possible. Officers of the organization were elected as follows: Major William F. Ladd, Connecticut, president; Major John C. Cone, Arkansas, vice-

president; Major Richard Taylor, Indiana, secretary-treasurer, and Major W. T. Tipton, Maryland, chairman of the executive committee. Major Taylor was the Indiana representative at the session.

The 118th Observation Squadron in Indianapolis has twenty officers on active duty all capable of piloting service type craft. The pilots are looking forward to the inauguration of the new ships. At the time of the burning of the Jennies, September 1, the Indiana outfit under the direction of Major Taylor was reported to have been leading all National Guard units in flying time for the summer.

FIRST LIEUT. Ernest A. Cutrell, formerly with the Prest-O-Lite Company of Indianapolis and a member of the 113th National Guard Observation Squadron, is now an inspector for the Bureau of Aeronautics of the Department of Commerce. R. A. Lockwood, formerly of the 113th Observation Squadron of Indiana, is chief inspector in the Commerce Department Bureau.

NORTH CENTRAL NEWS

THE first salesman to cover this section by air is H. S. Paul, a shoe salesman from St. Paul. He arrived recently at the field in Superior, Wis., operated by A. J. Hase, with Capt. J. F. Westover as the pilot. As soon as he has put in enough hours to secure his pilot's license, he will cover his territory regularly by air.

THE Arrowhead Airways of Superior, Wis., have been fortunate in securing the services of Capt. O. C. LeBoutillier, former British war ace. Capt. LeBoutillier was second in command of the British fliers who were out after Manfred von Richtofen, Germany's leading ace, on that April day in 1918 when the Red Knight was killed by Capt. Roy Brown while attacking Lieut. May of the English forces.

ANOTHER point of exchange on the air mail route operated by the Northwest Airways between Chicago and the Twin Cities was added on November 22nd when Madison, Wisconsin, became a stop on this airline.

Over 3,000 letters were received by Postmaster W. A. Devine that were sent out on the first flight. Specially designed envelopes bearing the seal of "Madison, the Four Lake City, Wisconsin" were used by a number of those sending mail on the first trip.

This city recently purchased an airport site of 291 acres. Beacon lights are being installed so the field will be in readiness for night flying. This airport will eventually be used by the air mail, but the Pennco Field will be in service in the meantime.

The Royal Airways Corporation, successors to the Madison Airways Corporation, are operating the Pennco Airport, a fine 200-acre field. They have two ships in service, a Travel Air cabin monoplane and a Waco Nine.

THE Duluth Chamber of Commerce Airport Committee, under the direction of Julius M. Nolte, have announced their selec-

tion of a site for an airport for the city.

The 65 acres that seemed to be most suitable from the Committee's standpoint are about five miles from the post office and are close to water that could be used for seaplanes and amphibians. Proponents of this site believe that it is large enough for future developments as the landing speeds of ships in the future will be reduced and the necessary run before take-off will be shortened, so the present long runways for large ships will be unnecessary.

Whatever selection is finally made by those in authority, there is one point that is agreed on by all and that is: Duluth needs an airport and quick action is both desired as well as required, if they want to receive any benefit from this increasing interest in aviation.

THE Duluth News Tribune sponsored a model flying contest, the finals of which were held at the Armory. Only two-tenths seconds separated the duration of flight of the winner's, Robert Sasyama, entry and that of his nearest competitor, John Rappold of Chicago, the National champion model flier, was in Duluth for a week previous to the tournament instructing the young fliers. It is hoped that the enthusiasm of these youngsters will be sufficient to convince some of their elders that Duluth will benefit by having full size ships in the air near Duluth, but an airport is necessary before such a sight will be a regular habit.

WM. (BILL) WHORTON of Huron, South Dakota, is intensely interested in making things hum along flying lines in his city. Bill and two air-minded friends are planning the purchase of a light commercial ship so as to be able to be in the air whenever desired.

THE boys from the 109th Aero Squadron, Minnesota National Guard, had the opportunity of putting in a number of hours in the Consolidated PT-1 during the several week's stretch of fine flying weather.

Capt. Westover and Lieut. Smith of Minneapolis are busy instructing students, carrying passengers and going in the air when requests for their services are desired.

W. G. Mead is piloting Dana Slingerland's Hess Bluebird, which is in service as a demonstrator and passenger carrying ship.

DES MOINES, through the efforts of some of its organizations, is increasing its importance as an air-minded city. Information concerning airports is being collected and plans are being prepared, so operations can be put into action as soon as the busy season opens in the spring. A drive for an up-to-date hangar is being planned for the new municipal field and it is the aim to center all commercial flying activities at this airport.

OSHKOSH, WISCONSIN, has a good field of slightly more than one hundred acres, that is well drained, marked with the customary 100-foot landing circle and is about two miles from the post office.

The Oshkosh School of Aviation recently opened with A. R. Mensing, jr., as chief instructor.

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P & A Photo

The Stinson monoplane, "Adelaide", Weis and Solomon endurance flight plane

MINNESOTA AIR NEWS

By W. S. SCHLEY

THE St. Paul-Crookston Armistice Day Air Derby was postponed, because of unfavorable weather conditions, until the latter part of May. This was announced by Col. L. H. Brittin, executive vice president of the St. Paul Association, who directed the plans for the race which was to have started from the St. Paul Municipal Airport, November 11.

THE Mohawk Aircraft Corporation, of Minneapolis, Minn., recently released its first low wing monoplane for public inspection. In recent test flights over the Wold-Chamberlain field the plane more than fulfilled expectations for performance and endurance, L. A. Dahlem, president of the corporation, stated.

Other officers of the company are: W. C. Cummings and G. A. MacDonald, vice-presidents, and S. E. Whitney, secretary and treasurer. The plane is described in detail in the technical section of this issue.

RE-ROUTING of the air mail and passenger line of the Northwest Airways, Inc., to include Madison, Wis., beginning November 1, was accomplished by Col. L. H. Brittin, vice-president and general manager, after a conference in St. Paul with W. P. MacCracken, assistant secretary of commerce in charge of aeronautics, and Mayor A. G. Schnedeman, of Madison. The change of route was made in order to supply the demand of Madison business interests for both mail and passenger service.

The Department of Commerce will take immediate steps to provide additional beacon lights on the added leg of the Northwest Airways route. Madison now has two privately owned airports, one of which will probably be acquired by the municipality.

MISS VIVIAN ERICKSON, 20-year old nurse of Chaska, Minn., has laid aside the white uniform and cap for a helmet and goggles. She is the only girl student flier in the Northwest Aviation School this year.

SETTING a new air mail speed record, Chadwick B. Smith, of Minneapolis, pilot for the Northwest Airways, Inc., flew a Stinson-Detroit 400 miles from Minneapolis to Chicago through a snowstorm in 182

minutes, on November 11. He clipped eight minutes off the previous record, making an average speed of better than 131 miles an hour over the entire route.

FLYING the Laird "National Eagle,"

Charles "Speed" Holman, winner of the New York to Spokane air race made an exhibition flight over Stillwater during a celebration, November 3, in honor of the turning on of the city's new lighting system. He also spoke on aviation, after participating in a parade through the city in the afternoon.

DINNER FOR ORTEIG

RAYMOND ORTEIG, donor of the \$25,000 prize for the first New York to Paris non-stop flight won by Colonel Charles A. Lindbergh, was the guest of honor at a dinner on November 2 at the Waldorf, New York City. Colonel Lindbergh, Clarence D. Chamberlin, Lieutenant Lester J. Maitland, Secretary MacCracken and many others prominent in aviation development attended the dinner.

The Cross of Legion of Honor was conferred on Mr. Orteig by Maxime Mongendre, French Consul General.

ENDURANCE FLIGHTS

ENDURANCE flights are being planned to take place with five different planes, within this month. Edward F. Schlee and William S. Brock will attempt to break the record of 52 hours 23 minutes 11 seconds made by the German pilots, Risticz and Edzard, on August 5th last in a Junkers W-33 plane with Junkers L-5 engine. They will use the same Stinson monoplane, *The Pride of Detroit*, with 225 h.p. Wright Whirlwind engine, in which they flew across the Atlantic, Europe, Asia, to Japan. The flight will be made at Daytona Beach, Fla.

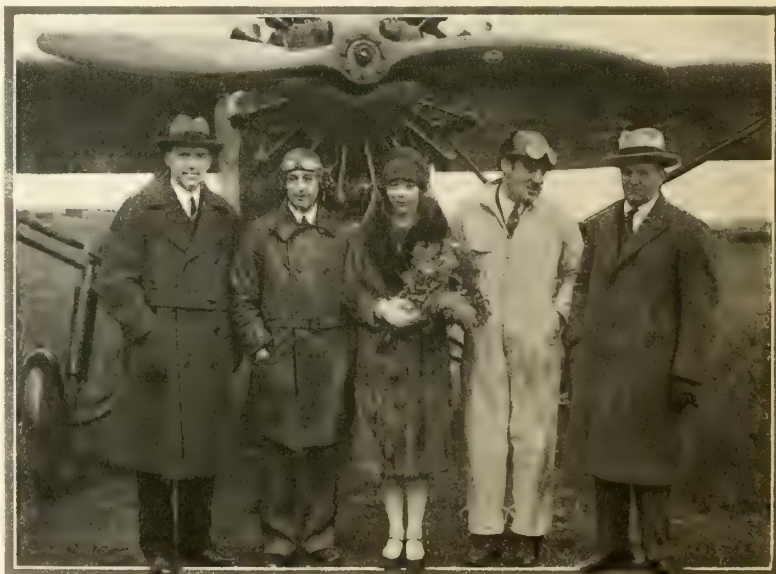
Another Stinson monoplane, *Miss Adelaide*, powered with 225 h.p. Wright Whirlwind, will be flown from Roosevelt Field, L. L., N. Y., in an attempt to regain the endurance laurels. This one will be piloted by George Weis and Louis Salomon.

The Splitdorf, a Fokker Universal with 225 Wright Whirlwind engine, named after the Splitdorf Electrical Company which is backing the flight, is another contestant. It will be flown by Bert Acosta, one of Commander Byrd's pilots on his transatlantic flight, and Emil Burgin.

Miss Elizabeth Robinson, daughter of the Assistant Secretary of the Navy Robinson christened *The Splitdorf* on November 27. Mr. Robinson, Assistant Secretary of War for Aeronautics, F. Trubee Davison, and Assistant Secretary of Commerce for Aeronautics, William P. MacCracken, Jr., attended the ceremony. Mr. Davison spoke briefly, wishing the fliers success.

A specially-built Fairchild cabin monoplane with a large wing is nearing completion at the Fairchild factory for the contest. It will be powered with a 135 h.p. Fairchild Caminez engine.

Besides these planes, it is quite probable that one of the new Bellanca monoplanes, now being built and which is described in the technical section of this issue, will also attempt to make the record.



Sec'y MacCracken, Emil Burgin, Miss Elizabeth Robinson, Bert Acosta, and Sec'y Davison at the christening of "The Splitdorf" endurance flight plane.

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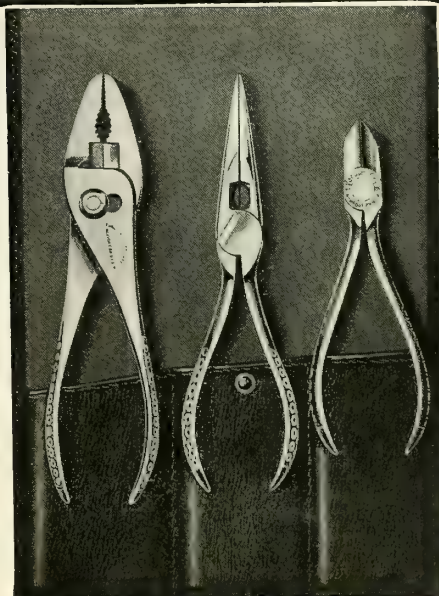
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STUDENT LEARNS TO FLY IN A DAY

THE second successful experiment in teaching a man to fly in a single day was completed at Lunken airport Sunday, November 6, when instructors of the Embry-Riddle Flying school soloed Frank W. Shelton, jr., after 5 hours and 34 minutes of dual instruction.

Shelton, a fourth year student in the pre-medical course at the University of Cincinnati, was selected by a popular voting contest among the students as the subject for the experiment. He received two votes less than another student, but the winner failed to pass the U. S. Department of Commerce test and could not be taught.

At 9:30 Sunday morning Shelton had his first ride in an airplane, and this first ride was the real thrill of the day for him. After he and Rader had climbed to 2500 feet in the OX5 Waco instruction ship, the motor began to knock and Rader cut his switch. Then, with a dead stick he landed his student, giving him one of the real experiences of flying after his first 15 minutes in the air.

After 19 minutes more of "air work" in another Waco, Shelton made his first landing at 10:49. By 12:56 he had made 23 landings, and after a few wingovers with the instructor, the student and instructor landed for lunch, which was served on the field.

All this time a brisk breeze was blowing, at times reaching a velocity of 20 miles an hour. Rader and Vine both classed Shelton as an unusual type, perfectly fitted for flying. He is a calm, sober young man whose decisions, according to his mother, Dr. Violetta G. Shelton, are always made after deliberation. Unless he had been of this character, and thus an apt student, Rader and Vine would not have soloed him they said after such limited preparation.

By 3 o'clock Shelton had made 40 landings, and he rested again at 4:16 after his 53rd landing. At 6:03 he made his 74th landing, the last under dual inspection, and Rader stepped out of the plane and motioned him to go around alone. At this time it was quite dark on the field and the sun had sunk behind the Kentucky hills 20 minutes before.

There was much tension on the field as Shelton gave her the gun and started around alone. It seemed that he went unusually high and made an unusually long circle before he brought the plane around into the wind, cut the gun and started his glide.

Finally he leveled off, and instructors and spectators held their breath until his plane rolled to a stop after a slight ground loop. His landing was a perfect three-point landing without one of the faults of the average student.

John Paul Riddle, general manager of the company, and Raymond D. Harris, head of the flying school, emphasized the fact that the test had no especial practical value except to demonstrate to the public that flying is not a difficult art to master. Shelton was not graduated as a student of the school but after an hour of solo flying he will be given a diploma.

TRAVEL AIR NEWS

TRAVEL AIR'S new building, 75x275 feet, a duplicate of the one recently completed and occupied, is rapidly assuming shape and will be ready for occupancy soon.

A Buick dealer in New York City recently contracted for 50 Travel Airs for 1928 delivery.

Lawrence Ensminger, of Omaha, is a very successful dealer, coming regularly for ships to fly away for delivery.

H. M. Memcke, of Hawaii, an ex-Navy pilot, has bought an OXX-6 job for delivery as soon as possible.

Eddie Stinson was a welcome visitor recently at the Wichita Airport on his way back to Detroit from the Pacific Coast. He was flying one of his good monoplanes, of course, and was entertained while here by Walter Beech.

Bob Shank, dealer in Huntington, West Virginia, recently took away another new OX-5 job after signing up for 25 ships for 1928.

Charles Landers, a Wichita pilot, recently flew to Boston Airport in an OXX-6 plane which he delivered to the buyer there.

An OX-5 biplane was delivered last month to one of the officers of the Ford Motor Company at Detroit.

Earle Ovington, of California, one of the first air mail pilots, took delivery of an OX-5 in October.

W. F. Marshall, of Waterloo, Iowa, has been appointed dealer for his state. He took an OX-5 job away on October 26 for demonstration purposes.

O. G. Harned, of the sales department, is on a barnstorming trip through several states in the Middle West. On a recent two weeks' trip, Mr. Harned closed contracts for \$276,000 worth of Travel Air planes for '28 delivery.

W. B. Howell, of Wichita, bought his third Travel Air on October 22. His new ship is a J-5. He has these ships trained so that they will come right up and eat out of his hand.

George Wies, New York City dealer, ar-

rived at the factory on October 25 to take delivery on an OX-5. He left on the 26th, taking with him as passengers Walter Beech, president, and H. E. Weilmiller, chief engineer of the company, who had business in New York, Washington and Dayton.

Another new Whirlwind biplane was recently completed and delivered to the Department of Commerce.

H. C. Lippiatt, dealer at Hollywood, California, who won first place in the San Francisco-Spokane race, was at the factory on October 22 and took delivery on another OX-5.

The White Castle System of Hamburger stands will soon be inspected by the proprietors, Anderson and Ingram, with the aid of a Travel Air biplane. Starting with one small stand in Wichita just a few years ago, the system now operates in a number of cities in the Mississippi Valley, and it was necessary to employ air travel to speed up the visiting by the proprietors. Walt Anderson, the president, is taking flying instruction, and expects to do his own piloting.

PRES. OF ECLIPSE DIES

EDWARD J. DUNN, president of the Eclipse Machine Company, died on October 23.

Mr. Dunn was born in Elmira, January 23, 1866, and throughout his life identified himself with that city, devoting much of his time to numerous civic and public welfare movements there. During the World War, Mr. Dunn was executive chairman of eight counties on the war industries committee and a member of the executive committee of the Sixth Region of the war industries committee. At the time of his death he headed several organizations, among them the Eclipse Machine Company and the Eclipse Textile Devices, Inc., of Elmira.

The passing of this outstanding individual is sincerely mourned not only in the community in which he played so important a rôle, but also in the wide-spread circle of friends with whom he came in contact in the business.



Left to right: Lt. Homer Rader, instructor; Lt. Raymond D. Harris, head of Embry-Riddle Flying School; Frank Shelton, "Fly in a day" student; Lt. Warren Vine, instructor of the Embry-Riddle Flying School, Lunken Airport, Cincinnati.

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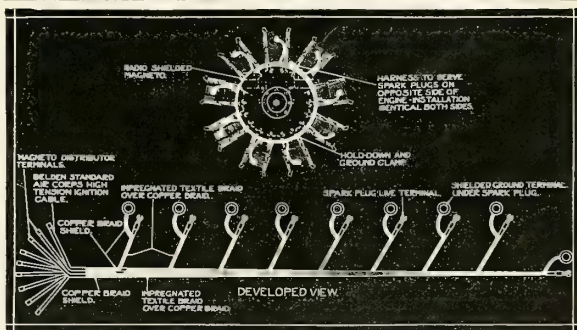
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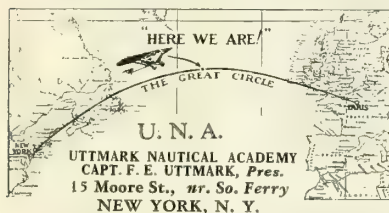
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PHILIPPINE AIRLINE

A COMMERCIAL airline between Manila and important Archipelago points is being operated by the Philippine Airways, Inc., using Ryan 5-passenger Whirlwind-engined Brougham planes. In addition to operating a passenger, mail express and freight service, the company conducts a flying school, aerial photography and exhibition flight business and plan to repair and build planes, also to import and sell planes and accessories.

The incorporators of the new company are: S. F. Aubrey, A. J. Croft, Walter Bruggmann, Rafael Alunan, Crisanto de los Reyes, A. B. Cresap and Florentino Garriz.

Mr. Croft, who will be in charge of flying and the technical end of the company, is a graduate of the Curtiss school of flying at San Diego, California; received his first pilot's license in 1914 and immediately began conducting a flying school and doing exhibition work in Bay Shore, Long Island.

At the close of the war, during which he served as instructor, Mr. Croft was sent to Manila by the Curtiss Airplane Company for training instruction work. He piloted the first airplane from Manila to Calapan, Capi, Cebu, Iloilo, Romblon, and return and also made many other interisland flights.

In 1921 and 1922 he was in charge of the air service for the South China government. He then returned to the United States where he was instructor in the California Reserve Officers branch of the Air Corps. He again returned to Manila in 1925.

FARGO, N. D. AIRPORT

GOVERNOR A. G. SORLIE, of North Dakota, dedicated Hector Airport, the Fargo municipal landing field, at a ceremony held the latter part of October. The *Stanolind*, the Ford transport owned and operated by the Standard Oil Company of Indiana, brought a group of Standard Oil Company officials to Fargo for a conference and participated in the dedication program.

Governor Sorlie pointed out in his address that Fargo was anticipating the future by establishment of an airport at this time and stated that in a short time airline connections will be as important to a city's progress as highway connections are now. The program was in charge of Murray A. Baldwin, president of the Fargo Aeronautic Club.

The airport was given to the City of Fargo to use until such time as Fargo can purchase a site for a landing field, by Martin Hector, a pioneer resident. The field was first used for the planes which landed here during the National Air Derby. It is a quarter section of land, free of obstructions, lying half a mile from the city limits and is being equipped with hangars, proper markings and other things for the accommodation and convenience of fliers.

Establishment of an airport in Fargo is the result of efforts of the Aeronautic Club, which also is working on proposals of several airline companies and proposed companies to route a commercial air line through Fargo, connecting St. Paul and Minneapolis and Winnipeg, Manitoba.

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BARTLESVILLE AIRPORT

THE Philips Petroleum Company has recently completed the construction of their modern, privately owned airport, one and one-half miles directly west of the center of Bartlesville, Oklahoma. The field is 4700 feet north and south by 1800 feet east and west. It is smooth and free from obstructions. There are two hangars on the field.

Both high and low test gasoline and motor oils are available at all times. The field is not lighted for night flying at the present time. The name "Bartlesville" has been painted on one of the large buildings in the middle of the city with an arrow pointing toward the field.

SCHENECTADY AIRPORT

SCHENECTADY AIRPORT is gradually taking the shape of a high-grade port. It is situated on the main highway north, with direct entrance from same, and but three miles from the heart of Schenectady's business section. It covers 195 acres of land located above the lowland fog area of that particular vicinity and excellent soil, with good natural drainage.

For most of the activity in the past six months, the southern end of the port has been used, which offers a 2200 foot east-to-west runway (west wind is the prevailing in the locality). The work of scraping, rolling, and developing the four permanent runways which the port will have is progressing rapidly. When completed there will be available a 4000-foot northeast to southwest runway, a 2800-foot northwest to southeast runway, a 2700-foot north to south runway, and a 2200-foot east to west runway.

An administration building and an 80 by 66 foot hangar are on the field and additional buildings will be erected along the western edge of the 2800 and 2700-foot runways. A contract has been let for the lighting equipment which includes one G-E beacon, flood lights and the necessary boundary lights. The airport is being built by William E. Arthur and Company.

A flying school and a taxi service has been operated on the port since July by a local aviator, Victor Rickard.

GRAND CANYON AIRPORT

THE Grand Canyon Airport, now being built by B. Russell Shaw and Company for the Scenic Airways, Inc., is about 7,000 feet above sea level, and situated at the foot of the Red Butte Mountain. It comprises 768 acres, which makes it one of the largest airports in the country, having three runways, the shortest one of which is 4,300 feet east and west, and the other two over a mile each in length, and any part of the field is suitable for landing. A steel frame hangar, 80 feet wide in front, 50 feet wide at the rear, and 90 feet in length, has been constructed. The field is equipped with night landing lights, oil house, executive offices, passengers' waiting room, shops and pilots' sleeping quarters.

Many difficult problems have been encountered in constructing this field, such as lack of labor and materials. All the water used had to be hauled from Flagstaff, a distance of 90 miles, and steel trusses over narrow winding roads, a distance of 18 miles from the railroad station. The steel for the hangar was ordered and shipped from St. Louis. They had a great deal of difficulty in securing sand for the concrete, due not only to the scarcity of sand, but also to the exorbitant prices asked. Before starting the actual work of construction of the airport, it was necessary to kill off innumerable prairie dogs, and to fill their cellars. This difficulty was overcome through the courtesy of the Department of Agriculture who eradicated these prairie dogs.

THE LAIRD AIRCRAFT CORP. OF KANSAS

THE Laird Aircraft Corporation of Kansas has been formed, with a capital stock of \$250,000, to manufacture and build a four-passenger cabin type biplane, powered with a Wright Whirlwind engine. This plane will embody the latest designs in interior coach work and will be a product that is built to an ideal and not to a price.

The officers and directors of this organization are as follows:

Harry D. Cottman, president; W. H. Gas-
 kins, vice-president; Leva D. Murray, secre-
 tary and treasurer; Charles L. Laird, chief
 engineer and factory manager; A. H. Hill,
 A. E. Hurford, and Bruce D. Billingsly,
 directors.

LAKE CHARLES FIELD

WATKINS FIELD, Lake Charles, Louisiana, was officially opened on October 29. Lieuts. Foster, Heber, Boyd, and Pennington flew over from Fort Crockett, Galveston, Texas in three Douglas O-2's and entertained the crowd with some fine formation flying. The O-2's had no trouble at all in landing and taking off, which was a good test for the new field.

C. M. Drayton, secretary and treasurer of Houston Airways, Inc., came over for the day with two officials of the Galena Signal Oil Company as passengers in one of the company's new Eaglerocks.

Jimmie Wedell, chief pilot of Louisiana Airways, Inc., came over from New Orleans in a Hisso Eaglerock bringing Dick Proctor, one of his students with him. Both Wedell and Drayton did a rushing passenger carrying business.

Free gas and oil was furnished the commercial fliers and all visiting fliers were entertained at luncheon and dinner and at a dance at the Country Club that night.

The field, named in memory of J. B. Watkins, comprises about sixty acres and the entire tract has been graded and leveled so that planes can land from any direction. There is a 100-foot white circle in the center and a wind-cone in the northeast corner of the field; no obstructions except a low power line running along the north side.

Three buildings in Lake Charles are air marked with the name of the town in letters twenty by ten feet and arrows pointing to the field.

REYNOLDS ELECTED NEW N. A. T. PRESIDENT

EARLE H. REYNOLDS of Chicago has been elected president of National Air Transport, Inc., in place of Howard E. Coffin, the retiring president. Mr. Coffin has been president of the company since its organization.

Mr. Reynolds is president of the Peoples Trust & Savings Bank of Chicago and is the son of George M. Reynolds, chairman of the board of the Continental and Commercial National Bank. He has been a director in National Air Transport, Inc., since its organization in 1925.



AERO DIGEST will award a prize of \$5 each month for the best humorous contribution published. Only those pertaining to the aircraft field will be considered. Address the "Picked From the Air" Department, Aero Digest, 220 West 42nd Street, New York, N. Y.

Russell Gard, Philadelphia, Pa., won the prize for December.

An elderly lady, after searching vainly among the bookshelves, very timidly approached the book dealer and asked:

"Do you know where I can purchase Colonel Lindbergh's book, 'It?'"

AIRPLANES ARE MADE

But These Aviators Are Born!

By ARTHUR "BUGS" BAER

WHEN Byrd tags the South Pole, it will not prove anything, except that American pathfinders pick the toughest detours.

Byrd has already played ring-around-a-rosy at the North hub.

Lindbergh picked out a pin spot in Europe and landed right on the point. He followed the usual American tourist custom of reaching Paris by getting there without his baggage.

He disappointed the French officials, who love to examine trunks with an axe.

Lindbergh's non-stop excursion brought aviation laurels back where they belonged. In America. Which is exactly where the Wright Brothers flew the first machine at Kitty Hawk.

Then Chamberlin indorsed Lindbergh's trip by landing in Germany and Byrd swelled the overhead immigration quota by landing in the English Channel on the first try.

Byrd proved one thing. And that thing is, you cannot bounce across the ocean.

You must stay up in the air. While America has been doing that, how about foreign competition?

It's all ground aviation. An English aviator has been stalling around Croyden for six months.

He's waiting for favorable weather. London has been waiting for that kind of stuff for 500 years.

However, England now claims the longest postponed flight.

The German aviators actually got off the ground in Berlin. But they didn't get high enough to keep their feet from dragging.

Persia isn't doing anything at all. If a Persian falls anywhere, it's going to be off a camel.

France has been tuning up for a long time. But France is something like Fred Perry's uncle. He kept polishing his trombone for years. And couldn't play a toot.

They claim that our flights are 99 per cent mechanics. And only 1 per cent man. Well, a bow and arrow is 100 per cent Indian. And the same is true of American airplanes.

Once they get up in the air, airplanes are 100 per cent aviator.

And to prove it, Lindbergh is going to put a tail light on a broom and make that trip all over again.

Courtesy of New York American, Inc.

Optician

Preacher: I can 'see good in all things.

Sgt. Mike: 'Scuse me, sir; but can you see good in a fog?

The new airplane that functions like a bird will solve the problem, provided the bird is a duck.—*Harrisburg News.*

As far as we know, Mr. Levine never had a quarrel with anybody in Java or New South Wales.—*Detroit News.*

Down to Flying Weight—

Woman flight commander abandons evening garments to reduce load.

Colonel Lindbergh's Report

Lindy is back with us after a tour of the country, during which he visited every State and attended something like 9,234,567 banquets, luncheons, barbecues, etc. He is at work on his report to the Government, which it is understood will favor three things:

1—The abolition of the hors d'œuvre as interpreted by the average hotel keeper.

2—Government regulation of the fish course.

3—Federal standardization of coffee.

Colonel Lindbergh also feels that this country is behind other nations in washing its celery and lettuce.

Professional promoters' radio message to a girl flyer as they sit in comfortably furnished rooms in one of the best hotels in the city: "Don't turn back. We are well and strong."

An Oversight

Well, Mr. Levine was received by the Pope, and without his lawyers.

Up to the last moment his friends feared he might send in a statement saying he had decided to have an audience with somebody else.

"What's that plane doin' steerin' fer us?" inquired the mate of the *Barendrecht* as he sighted Miss Ruth Elder's machine.

"Better change yer course a point," declared the skipper. "Y'never kin tell about these women drivers!"

An aviatrix who is booked in vaudeville and scores heavily is called, of course, a hit and run flyer.

Mr. Earl Carroll, having been pledged by his parole to keep away from all persons of bad reputation, returned to Broadway and immediately placed an order for a balloon.

The Pope tried to engage Mr. Levine in conversation, but the Brooklyn boy was "too flabbergasted to say a word." This disposes of the rumor that after a sweeping gaze around the room the flyer remarked, "And both of us were poor boys when we started!"

H. I. PHILLIPS.

Courtesy of the New York Sun.

IMPORTANT!

Change of Advertising Rates

Effective with January, 1928, Issue

IN the past two years the circulation of AERO DIGEST has grown from 7,800 per month to over 40,000.

We have maintained our low rates through the struggling period of the aeronautical industry giving everyone with a product or service to offer a maximum number of sales opportunities at a minimum cost.

Our increased circulation now compels us to raise our rates 25% in order to cover the cost of production.

AERO DIGEST covers the aircraft field completely. Manufacturers of aircraft, engines and accessories have found that AERO DIGEST brings them large returns steadily and consistently.

Aircraft operators of all classes of service are building their business through our advertising columns.

There are valuable markets here that are undeveloped as yet. Manufacturers wishing to investigate the opportunities in this field will find us ready to co-operate with them.

AERO DIGEST

THE MAGAZINE OF THE AIR

220 West 42nd Street, New York, N. Y.

FOREIGN AERONAUTICAL NEWS IN BRIEF

Compiled from the foreign aeronautical press, the Automotive Division and the Transportation Division, Bureau of Foreign and Domestic Commerce

ENGLAND

LIGHT Airplane Clubs have provided a good market for small airplanes in England.

Existence of the clubs is made possible by subsidies granted by the Air Ministry to the extent of £2,000 to each club upon organization, and £1,000 per year for maintenance. In addition, a sum of £10 is paid by the Air Ministry to the club concerned for each member who obtains a class "A" pilot's license. A sum not exceeding half of this amount may be allocated to the member. In the British budget for 1927-28 (fiscal year ending March 31, 1928), the sum of £16,400 was appropriated for assistance to light airplane clubs. Included in this amount was a sum for each club not to exceed £1,000 for maintenance of equipment, and for grant of £10 for each member who, having been trained on club aircraft, qualifies for a pilot's license.

The following Light Airplane Clubs come under the Air Ministry scheme, and all are equipped with the De Havilland "Moth" (27-60 h.p. A. D. C. "Cirrus" engine); London Aeroplane Club, Stag Lane, Edgware; Bristol and Wessex Aeroplane Club, Yate, Gloucester; Hampshire Aeroplane Club, Hamble, Southampton; Lancashire Aero Club, Woodford, Lancs.; Midland Aero Club, Bromwich, Birmingham; Newcastle-upon-Tyne Aero Club, Cramlington, Northumberland; Norfolk and Norwich Aero Club, Mousehold, Norwich; the Scottish Aero Club Movement, 101, St. Vincent St., Glasgow; Suffolk Aeroplane Club, Ipswich; Yorkshire Aeroplane Club, Sherburn-in-Elmet.

The following independent clubs do not come under the Air Ministry scheme: The British Private Aircraft Owners' Club, the Seven Aeroplane Club, the Southern Light Aeroplane Club, the Halton Aero Club, the Cranwell Light Aeroplane Club, The R. A. E. Aero Club.

THE altitude attained by Lady Heath (formerly Mrs. S. C. Elliott-Lynn) on October 8 on the Avro Avian was 17,280 feet, which is exactly the same as that made by the Hon. Lady Bailey on a D. H. "Moth" on July 5. The altitude record for the Two-Seater Class Light Aeroplane is, therefore, still retained by the Hon. Lady Bailey.

CANADA

CANADIAN AIR NEWS

By C. P. C. Downman

MUNICIPALITIES throughout Canada also have shown keen interest in the plan to establish a chain of airports across the Dominion, western Canada particularly seems enthusiastic and it appears probable that in the near future landing fields will be provided in every province.

Something like a million dollars worth of aircraft already has been contracted for and more will have to be ordered to meet the demands for service.

Work has started on Montreal's new airport at St. Hubert, about six miles from the city. The field will be one and one-half miles long and one and one-quarter miles wide.

The Government will also establish an air field at Rimouski, Quebec, to be used in connection with air mail service recently established between this city and Montreal.

Another field will be constructed at Sethbridge. This is the second city in Alberta to establish an airport, Edmonton having been the first.

IMPORTANT developments in aviation in Canada are indicated by the encouraging response which has met the offer of the Department of National Defence to assist bona fide airplane clubs by giving them aircraft and equipment. Already nearly a score of clubs have signified their desire to

take advantage of the department's offer to supply two planes with engines complete to any approved club or association meeting the conditions of the grant.

The first aviation club to be incorporated in the city of Quebec has been given endorsement by the finance committee and authorized to operate under the name of the "Quebec Aviation Club."

The group is comprised of men who were aviators and had seen service at the front. The promoters include such airmen as Captain A. M. Kinnear, M. C., A. F. C.; Captain Carl Falkenberg, D. F. C.; Captain E. F. Brown, M. C., Croix de Guerre; Captain E. Sharpe, who saw service in India, and ten other practical aviators.

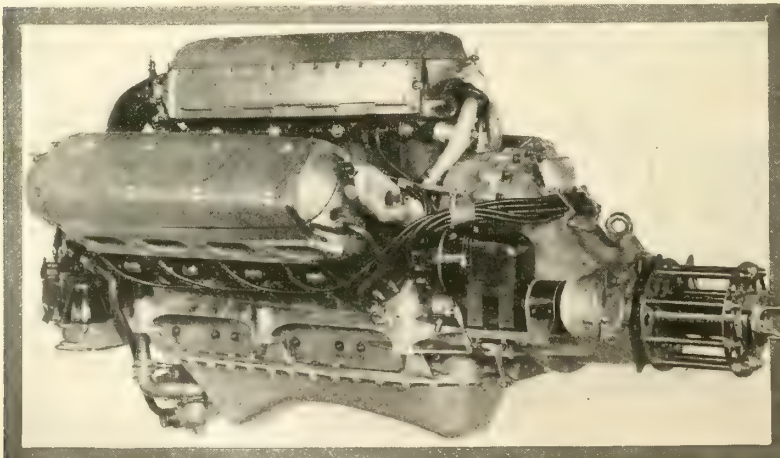
The Edmonton and Northern Alberta Aero Club has been formed in Edmonton, with a membership of over 65, for the purpose of promoting civil aviation. The Federal Government has promised the club the use of two training planes, and two instructors have been engaged for training student fliers. The lectures are held once a week at one of the local armories, and in the spring the students will be ready to practice with the planes allotted by the Government, which will be stationed at Edmonton airport.

A STEADY expansion of the Canadian air mail service is being planned by the Post Office Department at Ottawa in connection with the Department of National Defence and private air concerns. In addition to the time saving schemes already announced for getting westbound European mail to Montreal and Toronto from St. Johns and Halifax, in the winter, three or four other services are now in prospect.

First, there will be a twice-weekly air mail service from Moncton, N. B., to the Magdalen Islands. Then there will be a weekly service from Rimouski or Father Point to the north shore of the St. Lawrence River, to serve stations and villages now served only by dog teams. The planes for this service will have a capacity of 1,500 pounds of mail. A third service being planned is for Pelee Island, on Lake Erie, from the nearest town on the mainland on the north shore of that lake. A twice-monthly service to Anticosti Island is also planned.

Permission has been granted to the Yukon Airways and Exploration Company at White Horse, operating an aerial service weekly between Dawson and White Horse, and at various intervals between Atlin and White Horse, via Carcross, to convey ordinary letters.

THE air traffic compact between Canada and the United States stipulating regulations to govern airplanes in crossing the international boundary has been extended for six months.



Napier Lion engine used to power the Supermarine Monoplane that won the 1927 Schneider Trophy at the Lido, Venice, Italy

GERMANY

A FLOATING dock for seaplanes was launched recently by the Lufthansa at Hamburg. The progress made in seaplane traffic has made the construction of a special dock for seaplanes necessary. The dock, which is capable of docking seaplanes of up to 100 tons, has been constructed along special lines and is to a certain extent in the nature of an experiment.

AN airport is soon to be established at Horta, Island of Fayal, Azores. A meteorological station has already been established there.

The Hamburg-American line is reported to be backing the project. This company is making actual preparations to develop a trans-ocean service. The transatlantic flight of the Junkers D-1230, which is now in Horta, is financed by this company.

AN International Aeronautics Exhibition will be held in Berlin, March 23 to April 11, 1928, which proposes to be the most important of its kind ever attempted in Central Europe. The fair will comprise a joint showing of all the important types of commercial, sport and practice airplanes.

TWO North German Lloyd liners, now under construction, will be equipped with seaplanes and used to land passengers twenty-four hours ahead of the docking of the ships. This will reduce the crossing time between New York and Channel ports to four days.

SOUTH AMERICA

THE PARIS-SOUTH AMERICA FLIGHT

By Ramon da Paz

THE successful flight of Dieudonne Costes and Joseph Le Brix has stirred the Brazilians to great enthusiasm.

Costes and Le Brix landed on October 14 at the Parnamirim aerodrome, near Natal (Rio Grande do Norte State). On the 16th, at 7:40 a. m., they took off from Natal, expecting to reach the Brazilian capital the same evening, but upon receiving notice of a change in the weather conditions from the Rio de Janeiro Meteorological Station, they landed at 5:30 p. m. at the Latécoère aerodrome near Caravellas. The 17th at 8:10 a. m. the two French pilots in the *Nungesser-Coli* took off over the coast route in the direction of Rio de Janeiro, where they landed at the Affonso field at 12:35 p. m.

Escorted by Brazilian Army and Navy planes, their arrival was the signal for a tumultuous ovation by the thousands of persons waiting at the aerodrome. Comte de Robien, French Chargé d'Affaires, General Sezeffredo Passos, Brazilian Minister of War, General Brilhante, Chief of Military Aviation, representatives of the President of the Republic and Ministers greeted the aviators.

On the 20th, at 5:30 a. m., the *Nungesser-Coli* took off for the Argentine capital. The weather was very bad and after an eight-hour flight the plane landed in Pelotas. There they spent the night and the next day flew on to Buenos Aires.

FRANCE

PELLETIER D'OISY, the famous French airman, and M. Gonin have completed another remarkable flight around the Mediterranean, during which they covered over 6,500 miles in six days. Their stops were made at Vienna, Bucharest, Beirut, Cairo and Casablanca, whence they made a non-stop flight of 1,242 miles to Paris in less than twelve hours, in spite of very unfavorable weather.

THE French flier, Marcel Doret, was declared the victor over the German flier, Gerhard Fieseler, in a stunt flying contest at Tempelhof Airdrome, Berlin. Each pilot performed his feats first in his own and later with his opponent's plane. The jury was made up of Dutch, Swiss and Czecho-Slovak judges.

ITALY

MAJOR MARIO DE BERNARDI, on November 5, flying the Macchi 52 racing monoplane (800 h.p. Fiat AS-3 engine) over a measured three-kilometer course at the Lido, Venice, made a new world's speed record of 296.82 m.p.h. His top speed was 315.5 m.p.h.

This beats Flight-Lieut. Webster's average speed, made when he won the Schneider Trophy, by 15 1-2 m.p.h.

On October 22 Major de Bernardi made a similar attempt and reached an unofficial average speed of 302.5 miles.

S A F E T Y IN AIRPORT LIGHTING

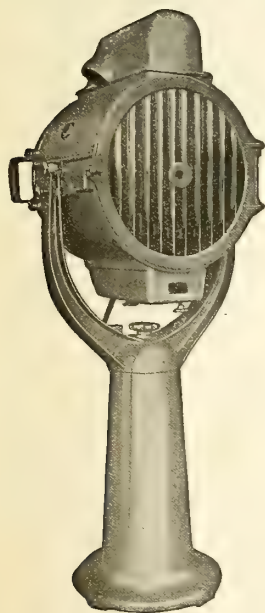
THE daytime usefulness of an airport is measured by its accessibility, freedom from obstructions and nature of terrain. The night time usefulness of an airport depends on all of these *plus* adequate Lighting Equipment in order to allow full and safe use by night. Consequently the greatest of care must be taken in selecting Airport Lighting Equipment.

The Sperry 18" Arc Floodlight is a flexible 3-Purpose Unit insuring safe night landings.

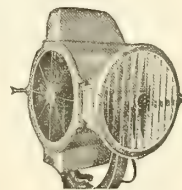
1. As a Floodlight it spreads the light 80° into a 1,000,000 candle power fan covering over 50 acres. One, two or three units may be used.
2. In a few seconds the spread door can be folded back, forming a Ceiling Light.
3. The powerful 30,000,000 candle power beam provides an Emergency Beacon that will assist a pilot in locating the field in adverse weather.

Write for full data on this important Floodlight Unit.

The Sperry Gyroscope Company
BROOKLYN,
N. Y.



As a landing field floodlight



As a powerful emergency beacon and ceiling light

AIR—HOT AND OTHERWISE

(Continued from page 641)

man who thinks right, and the respectful, wary admiration of the other fellows interested. From the start he showed plain symptoms of possessing every attribute of leadership. The N. A. A. needs leadership; the N. A. A. needs HIM.

GENERAL PATRICK knows as well as any one in this world what the policy of the N. A. A. should be. For example, he knows that in order to be successful the organization truly must represent everybody interested in the growth of aviation, whether it be civil, commercial or in our national defense. He also knows that this will require Government assistance and Federal legislation and exactly what these should be. He is quite well aware that in order to secure this Government aid and Federal legislation it must have a worthwhile membership, made up of men that actually mean something in our community, state and national life. He knows that it must have a membership important as a thinking mass, a talking mass and a voting mass. He knows that it must have a membership able to send to Washington a president who will command respect and not appeal for sympathy, as in the past has been the general rule. He knows that the President of the National Aeronautic Association, in the future, should think of aviation as a national asset, not of himself as a prettily perfumed pink tea hero; should think of just how the organization can be made actually useful, rather than of how it may be so maneuvered as to make it further personal political ambitions.

He knows that the head of the National Aeronautical Association will be a better head if he is not continually

bewildered by a desire to become an assistant Secretary of the Navy, forgetting that the nation as a whole is justly celebrated for its sense of humor.

He knows that the President of the National Aeronautical Association should head an organization fit and fitting, anxious and good enough to include among its membership, as affiliated bodies, the several hundred independent groups of air enthusiasts which have been formed during recent months, all wanting and trying, in their various ways, to help America in the air, but unable, as things are, to do much more than stimulate a general interest local to the various sections in which they have been separately organized.

Under such leadership as General Patrick would give the N. A. A. all these could and would affiliate with it, forming thus, while retaining all they wished of their individual independence, a mighty mass of the air-minded which would become with speed a potent factor in our national life.

Retaining their identities as flying clubs, aero clubs, aeronautical societies or what not, they still would be overjoyed to have the chance of sending delegates to National conventions, and they would welcome with enthusiasm such constructive suggestions as continually would flow between them. Under General Patrick a spirit of coöperation quickly would be roused, which, without delay, would wholly change the atmosphere pervading American aeronautics.

UNDER General Patrick the National Aeronautical Association would promptly organize a Junior Association. This was contemplated in the original charter, but this never has been seriously developed. A boys' magazine of national circulation has secured over 40,000 members to an Airplane Model League announced as short a time ago as last October.

Every one of these youngsters is a candidate for a national junior organization, such as General Patrick would build if he were head of the N. A. A.

Nothing could be more important. Every member of such a junior organization would be a potential member, when he grew to man's estate, of the parent organization, and would go to it with a background of knowledge and enthusiasm which would assure the absolute supremacy of the United States on wings in days to come.

General Patrick, as president of the show which now is languishing and (must I say it?) lollygagging for social distinction, when it is not lobbying in the interests of the Navy, would realize that the chapters in each state should be linked into a separate state organization, which would inform, enthruse and handle state workers as the local chapters stir and stimulate their local members. It should be these state organizations which should elect the delegates to a national convention.

In such an organization, headed by so competent a man, all the nation's aeronautical problems would be studied and eventually met, as the problems of the motor industry, in its human relationships, are met by the National Automobile Association. It is through that National Automobile Association that the nation has secured good roads and countless other benefits. These things have not come because the manufacturers wanted them, but because the people wanted them. That is the course which aeronautical interests certainly will follow. There really is no other in this nation.

AS a suggestion: One of the functions of this group might be to distribute through the nation where they would do the greatest good, and where they do not pene-

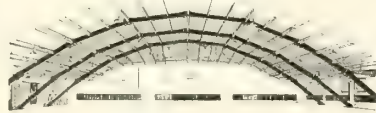


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trate at present, the very able reports and documents now issued in comparatively small numbers, and necessarily more or less still-born, by the Department of Commerce. What assistance this could give to the Department and MacCracken! How it could help him when he yearns for adequate appropriations!

Such an organization would have live, virile, energetic committees upon everything that's pertinent to report from every section of the nation to the National body. Then the new, the rebuilt, the deodorized and disinfected National Aeronautic Association could make to Congress proper recommendations. And Congress, seeing voting strength behind the Air Klan for the first time in its history, would sit up and take notice.

Such an organization, fellow citizens, would be as important to air development as the United States Chamber of Commerce is to trade. It would be the contact point for everyone who knows something which should be brought to the official attention of Washington.

HAD the National Aeronautical Association functioned since its birth as its founders meant that it should function, it could have handled all the problems which have constantly arisen and put the nation in its air development far, far ahead of the place it occupies to-day. It could have done a thousand things which I have no space here to enumerate, but which I shall be glad to write of when the reborn National Aeronautic Association has chosen General Mason M. Patrick as its next president.

A NOD AND A WINK

(Continued from page 658)

from their chairs in the Navy Building to other chairs out at the Washington golf clubs. The cabin of this machine is padded with copies of the Congressional Record, and is very, very, heavy. It takes an appropriation to move it.

Professor E. P. Warner, Assistant Secretary of the Navy in Charge of What Aeronautics the Navy has, has been selected to pilot *The Mud-hook*, which he will do by means of a pair of rubber slide rules and a protractor, also of rubber. This is known as "elastic progression," and is conceivable only by a stretch of the imagination. The good professor's navigator will be One-eyed Connelly, the well known gate-crasher.

Sweet Spirits of Nitre is the name of the National Aeronautic Association's entry—an entirely new vehicle of the air called a dizzygible, which is the result of the combined aeronautical learning of Porter Adams and a Rear-admiral, now, happily, retired from the Navy. The main features of this dizzygible are a large, well-filled gas-bag; a large, well-filled gallon jug, and a large iron safe, marked "Treasury," with nothing whatever in it. Attached to the gas-bag—a sausage-shaped affair covered with mayonnaise—are the remains of a defunct helicopter, powered by the Wrong Whirlwind motor, and fitted with balloon tires and a District of Columbia license plate.

"I have sometimes been asked," said Mr. Adams in an interview to-day, "what I have been doing all the time I was President of the N. A. A. Well, this is the answer." He pointed with pride to the dizzygible, which was bobbing up and down in the gentle breeze and trying to knock its tail against the trees, like the *Los Angeles* does. "This," said Mr. Adams, "shows what a man can do, not only aeronautically, but socially, if only enough members send in their five dollars. I hope to study political conditions

on the moon."

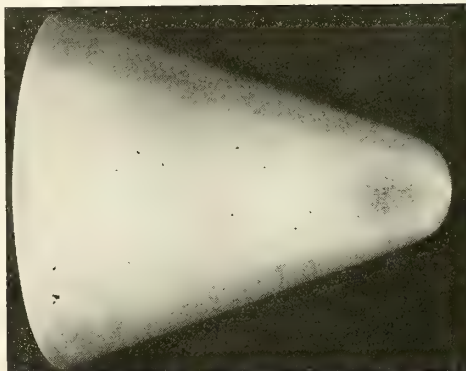
Mr. Adams will pilot the dizzygible, accompanied by Godfrey Cabot on the ukelele. To while away the tedium of the journey he is taking a well-stocked library, including several standard works on political navigation, such as, "Plunkett's Practical Politics—From the Parlor to the Presidency." Also "The Descent of Man"—Also "Impromptu Speeches for the Feeble-Minded—Massachusetts Edition, Fumigated and Bowdlerized."

The Babbling Brook, a tryplane entered by the Women's Christian Temperance Union—Local No. 469—carries as its coat of arms the figure of the late Carrie Nation, rampant, on a field "as you were" with gules and baked noodles done in tatting. This entry is hardly a thing of beauty, but what it lacks in charm it makes up in noise, like Senator Borah.

The ladies' flight committee are experiencing some difficulty in finding a pilot and navigator who do not drink. There are no temperance pilots at liberty, except possibly Bert Acosta—and he has just accepted a contract to cut the hay on Roosevelt Field with the left wing-tip of his Universal. However, as the ladies have remarked, America is dry, so it shouldn't be hard to find a dry pilot. They did find three dry ones out of a job, but as soon as the W. C. T. U. hired them and gave them a week's wages all of them became as wet as Henry Wacker of the Goodrich Rubber Ashtray Co. As a last resort the ladies will accept a wet pilot and roll him in blotting paper.

One of the outstanding entries in the Great Air and Front-page Space Derby is *The Spirit of Caviar*, a rocket-plane piloted by Count Popoffsky, the Russian pilot who, with his mechanic, Ivan Awfulitch, will essay the flight accompanied only by a vodka breath. (Cont. on next page)

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This rocket-plane was designed by Pushemoff, Communist inventor, and member of the All Inventors' Vegetarian Club of Interplanetary Cosmopolitans. Mr. Pushemoff thought this whole thing out on onions, though he affirms that he could have arrived at a similar result on carrots—or *kazots*, as they are termed in Leningrad. The mental effect of a *kazots* and a *sniffsky*—as an onion is called in Moscow—is very helpful to thinkers, Mr. Pushemoff declared. He has used them for years, though friends have urged him not to train on *sniffskys*, lest he injure his mind.

The rocket-plane is propelled by a series of gaseous explosions, such as those heard in and about the Capitol during a discussion of the Naval estimates, which propel the plane upward and onward with all the verve and abandon of an American tourist searching for the bar on an English liner. These gaseous explosions are manufactured by bringing the writings of Sinclair Lewis into contact with the heart-soothing poems of Edgar A. Guest, the poet laureate of Hamtramck and Dearborn. The net result in foot-pounds of potential energy is so staggering as to be practically a vacuum—or an *isobar* as they say in Russia, with just a dash of lemon and angostura.

Mr. Pushemoff endeavored to explain the motor by a series of drawings, and became lost at once. He got so far as to assert that the potential energy, in ohms, equalled the static flow of velocity, in spasms—and then he stuck fast. However, he declared that it would revolutionize the motor industry, unless Henry Ford got his new car out before 1937.

So many planes have been named "The Spirit of—" something or other (man being by nature an imitative animal) that it is a refreshing change to run across one

named *The Ghost of an Idea*, entered in the Luna race by one Cy Caldwell, who has written more and had less printed than any other author—or semi-author, so far as that goes—in the world. His friends have named him "The Collector," from the number of rejection slips he has been collecting. He is the inaugurator of a movement to compel editors to print their rejections in the form of postage stamps so they will have a resale value to philatelists.

His plane's motor, a Corona Four, has a standard keyboard, back-spacer, and carbon-paper remover. In the event of forced landings in the ocean the instantaneous margin release enables the whole composition to be dropped into the nearest garbage can.

Instead of a carburetor this motor uses Fred Brunner's invention, the Mastodonic Masticator, which converts rejection slips into pulp which is distilled into crude alcohol. This is a far cruder alcohol than the kind made in Newark to-day and sold in New York to-morrow. Caldwell's supply of this rejection fuel is sufficient to take him to the moon, but is not enough for a return journey. For this reason editors generally are determined not to send him any more rejection slips.

According to air experts—by which is meant anyone at all hanging around a flying field with some grease and a wise look on him—the Air and Space Derby is up against a problem. In former long distance flights the Navy and the ocean liners have been used to search for contestants who didn't quite get there. But for this flight the Navy is a trifle short of air rescue equipment. One of their planes is with the Marines in Nicaragua, the other is in the repair shop. The *Los Angeles* is off to another baby parade; and their bomber tripped over one of its own bombs and hasn't been seen since.

The contestants have been training their lungs to withstand the shortage of oxygen in the upper air. They have been riding back and forth on the New York Subway System until they have arrived at a stage of development where they can do without air. If they find air on the moon they won't know what to do about it.

HOPS FIELD, May 30—The Great Air and Space Derby from the earth to the moon is still awaiting favorable weather for a start.

HOPS FIELD, Sept. 29—The Air and Space Derby is still awaiting favorable weather for the hop.

HOPS FIELD, Dec. 30—The difficulty of flying the Great Air and Space Derby from the earth to the moon is so great that engineers now are working on a different solution. They are working on the problem of leaving the Air and Space Derby where it is and moving the moon down here to it.

EDITOR'S NOTE: Although Operative 7-11 of the Punterton Defective Agency was detailed to find Cy Caldwell, who disappeared under mysterious circumstances, leaving behind him a wife, a gallon of gin, and an unpaid gas bill, his search so far has been without result, other than heavy expenses—thus living up to the glorious traditions of the detective profession. The above article by Cy Caldwell was mailed in Washington, which gives rise to the suspicion that the unfortunate embryo writer may have been shanghaied aboard a sea-going leather-cushioned chair in the Navy Building, from which he managed to smuggle the article. No other word has been received, except the following official reports of Operative 7-11:

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Beaverized sheeplined leather helmets, \$7; fur lined leather helmets, \$12. Chamois lined leather helmets, \$5.50. Goggles of all types. Sheeplined leather moccasins, \$5.50. Sheeplined gaberdine flying suits with hookless fasteners, \$60. Sheeplined leather coats with fur collars, \$23.50. Wool lined reversible leather coat, \$18; leather breeches, \$12; leather jackets with knit cuffs, \$12.50. Sheep-lined leather helmets, \$4.50. Face mask equipped with wide-vision curved lens goggles, \$3.50. Khaki or white flying suit with hookless fasteners, \$9; khaki or white mechanics suit button fastened, \$4.75.

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Philadelphia, "Built for Sleep," (Slogan), October 24—I heard there was a fellow seen walking about here as though he had some life in him; so as he obviously wasn't a native Philadelphian I thought it might be my Subject. But he turned out to be a furniture salesman from Grand Rapids. He'd already dropped asleep when I got there.

Found no trace of Caldwell, though a flock of empty bottles in the Bellevue-Stratford looked like a clue. However, it turned out that Henry Wacker and Bill Arthur had been staying there.

Expenses of \$123.45 include \$35 for anti-sleeping-sickness serum injections. I stayed in Philly three hours, until I noticed that the serum was wearing off. Just managed to stagger into a Pullman and hurl myself into a berth before I passed out.

Jim Ray's the only living soul in that town.

OPERATIVE 7-11

Washington, D. C. (Dead Center), October 26—Well, I've got on the trail of the Subject at last after a hectic day in the Capitol. The first place I headed for was the National Aeronautic Association headquarters, for I figured that any aviation visitors would call there. But I couldn't find a soul in the place, except Carl Schory, who had ever been up in an airplane. And there wasn't a visitor there. It seems that nobody interested in aviation, except a few Modocks, ever call. If one does happen along and wanders in by mistake, the Association puts him in their home-made mail elevator and lets him drop.

The last gent they let drop was Al Williams, world's fastest seaplane pilot—if you could fly seaplanes without pontoons. It seems that Al tried to get the N. A. A. to use what little influence it has to secure the postponement of the Schneider Cup races until Al could get over to Italy, complete with floats. As the Americans had postponed the races last year for the Italians, it was thought that this year the Italians might wait for the one American who was sport enough to try to win the cup for America. And so they might have—if the N. A. A. had put up a good strenuous shout. But there's nothing strenuous about the N. A. A. Besides, it's kind of hard to mix society and politics and aviation, and get anything out of it except a mess.

Finally I chased over to the Navy Building, which is really the headquarters of the Association, and there I found an N. A. A. official in conference with an admiral. The admiral was telling him what to do and when not to do it, and the official was saying, "Yes, your Majesty. Very good, your Majesty. Thank you kindly, your Majesty." It seemed a kind of one-sided conference. At times the official would step over and give the brass buttons on the admiral's coat a polish, and then he'd sink to one knee again and offer up thanks for being allowed in there.

When I asked him if he'd seen Cy Caldwell lately, he fainted and had to be given smelling salts. The Rear Admiral in Charge of Smelling Salts rushed in himself, personally, and held the bottle to his nose. That was quite an honor, I thought. Usually they let a yeoman of the Smelling Salts Detail administer the relief. But then, the N. A. A. has been quite a help to the Navy.

I wonder why it is that whenever I think of the N. A. A. that I sort of get a mental picture of a bunch of grass hanging on to a tail-skid.

But about the Subject, Caldwell, the disappearing dodo—I've got a hunch that he's been seen in Washington, for several people have looked mysterious when I mentioned his name. The fact that the Navy Building is in an uproar has nothing whatever to do with Caldwell's disappearance.

The attack on Washington by the U. S. Ship *Magruder* has so disorganized Navy politics that I was able to sneak into an admiral's conference room unannounced. There I found fifty-five rear admirals discussing how to stay in Washington instead of aboard ships. The slogan, "Join the Navy and see the World," is to be changed to, "Join the Navy and see the

Potomac," I was informed. It seems that for every admiral or rear admiral who is floating on the sea, there are four floating about at afternoon tea parties in Washington. The Boston Tea Party was organized to dump tea into the harbor, but the Potomac Tea Parties are organized to dump tea into rear admirals. Some of those old former sea-dogs and present tea-dogs have put down so much of the fluid that permits Tommy Lipton to lose yacht races that they have floating kidneys. And when they visit any foreign court and are awarded decorations what they get is usually the Cross of Confucius and Ching Ling Sue, with palms and tea-leaves and of late a couple of juniper berries. It all comes under the heading of National Defense. The theory is that a man who has been forced to drink tea for years will grow so sour that when a war starts he'll simply fight like hell, even if he has to wear out sixty-two typewriters before the enemy is overpowered.

I got hold of a well known Commander in the Bureau and fixed him with my gimlet eye. "Has Cy Caldwell been around here asking for any bootlegger's telephone number?" I demanded. The Commander had a guilty look about him, as though he had been asked a question by Congressman James. "Come, come," I said sharply, in my best aircraft investigating committee manner, "answer yes or no, Commander."

"Don't say that," he moaned, "you remind me of the time I had to testify about naval aviation with Wilbur in the same room."

"Then answer," I said sternly.

He then told me that Caldwell had indeed been in for a phone number. I thought so.

"Where is he staying?" I asked.

He replied, "The Mayflower."

"Well, he had more luck than Magruder. He must have at least seen the President to have been invited on his yacht!"

"Not the yacht—the hotel," replied the Commander.



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When I rushed to the Mayflower I learned that he had just been thrown out. He was seen last heading for Anacostia. I shall proceed there as soon as I have telephoned to a friend whose number I procured from the Commander.

Later: My expense account has jumped \$40 in the last ten minutes. My friend has just called. I think after a night's rest I shall have something interesting to report about the Subject of this investigation though I may have to dictate it. I find that my fingers are slipping on the keys. Toodle-oo, folks. Regards to the office and kisses to the wall. Skip the gutter! Merrily, 7-11

Washington, D. C. October 28—I have found Cy Caldwell in a hangar at Anacostia, just as I hoped to find him. He was sound asleep under a Martin SC2. "A good place to sleep," he told me. "Glenn L. should supply a mattress and pillows with each one—or take the cushions out of a Marmon Sedan and send them along."

"Why did you disappear?" I asked. "Don't you know the Editor has been worried about you, and that Mrs. Cy has got out your insurance papers and is looking them over?"

"Poor little girl," he remarked feelingly, "I'm sorry to disappoint her, but those papers aren't any good yet. I doubt if they ever will be. Old soldiers never die—they simply fade away."

"I did not choose to disappear," he said, filling and lighting a pipe that drove me several feet away from him. "The fact of the matter is that I have been investigating naval aviation for I am going to Santo Domingo to organize an air force, and I want to know how to go about it. I learned how to knock dirigibles' tails against trees. And that's about all I have discovered."

Cy burst into tears and moaned softly to himself.

"I'm growing old," he groaned. "If I get much older I'll have to join the Navy or enter the old ladies' home. I suppose they'll make me a rear admiral—and that will be the end of me. However, I've scribbled off a few little items for my six readers which you may take back. I'm not going back. I'm going to the West Indies and capture Barbadoes from the Barbarians. Going to find a country of refuge for those who don't like the Volstead Act."

Cy Caldwell leaned his head against a Goodrich tire and fell asleep. As I moved away I heard a snore. But it wasn't from him. It came from the Officer of the Day, who was sound asleep under another of Mr. Martin's sleeping porches.

My final expense account is enclosed, to which I have signed my name. 7-11

VICTORIOUS YEAR OF AERONAUTICS

(Continued from page 643)

spectacular feat. He was accompanied by the Department of Commerce Fairchild cabin plane, with Philip R. Love, pilot, and Donald E. Keyhoe of the Commerce Department.

WORLD RECORDS MADE BY AMERICANS

Beside Chamberlin's record already mentioned five new records for seaplanes and three for balloons were established by American built aircraft during the year. On July 4th an altitude record was set by Lieut. C. C. Champion on a Wright "Apache" seaplane when he reached the 37,995 foot level. Four records were established on the same flight by the Lieuts. B. H. Connell and S. R. Pope of San Diego in a PN-10 seaplane with two Packard 600 h.p. motors on July 8th. The records were for duration and distance with 1,000 and 2,000 kilogram loads, for a distance of 947 miles in 11 hours, 7 minutes, 18 seconds. Four records are credited to the Vought "Corsair" seaplane. On April 14th Lieut. G. R. Henderson reached a record altitude of 22,178 feet with a ballast load of 1102 pounds (500 kilograms). On April 25th with Lieut. S. W. Calloway, U. S. N. at the stick, averaged 147.263 miles per hour over a hundred kilometer course with the same load. Two other records were made by the same ship on April 30th when 136.023 miles

per hour speed was maintained for 500 kilometers by Lieut. J. D. Barner, U. S. N., and a fourth record on May 21st when Lieut. R. Irvine, U. S. N., piloted the ship 1,000 kilometers at 130.93 miles per hour, with the same load. The "Apache" and "Corsair" were both powered with a Pratt and Whitney "Wasp" 425 h.p. engine. Capt. Hawthorne C. Gray was credited with three altitude records of the 5, 7, 8 categories (above 4001 cubic meters) when he reached an altitude of 29,398 feet. S. A. V. Rasmussen has been credited with a distance record of 580 miles for balloons of the 3rd category (901-1200 cubic meters) which has not yet, however, been officially homologated.

COMMERCIAL PROGRESS

The flights recorded above have undoubtedly given an added impetus to the increase in aeronautic activity, yet no progress could have been made without federal, state and—in the case of airports—municipal coöperation. In 1926 the Air Commerce Act was finally passed. But the machine created by that act was not finally assembled till this year, with all its wheels and cogs running smoothly. The regulations laid down by the Aeronautics Branch of the Department of Commerce are being complied with throughout the country, new and old types of ships, pilots and mechanics are being licensed and the haphazardness that formerly characterized a good deal of flying in this country, with resultant adverse publicity, has disappeared. Undertakings like the Ford Tour and Lindbergh's trip have brought home the fact that a good landing field is as necessary to a community as a railroad station, and the advice of the Department is being eagerly sought by individuals and municipalities interested in the laying out of airports. The work of mapping new airways, marking them properly and providing them with lighting facilities is progressing apace.

Important among the year's events is the final abandonment of governmental air mail operation. In this connection it should be noted that it was always the expressed intention of the government to do so eventually, but not till this year was it felt that commercial aviation had attained the high degree of operative efficiency and financial reliability to carry on that task. In order to establish themselves on a sound basis the transport companies equip themselves or gradually replace the obsolete Government planes with modern types combining the maximum carrying capacity with the minimum overhead and consumption. The competition thereby fostered brought about a general quickening of the industry's pulse and a keener attention to detail.

More attention is given to the passenger's comfort. Doors to cabins are wider and not encumbered by diagonal struts that one has to step over, greater attention is being given to elimination of exhaust noises, cabins are roomier and comfortably heated, windows are better placed for view—all points which do not add to the efficiency of the machine but react upon the psychology of the passenger. Mechanically more attention is being given to streamline and elimination of exposed bracing by improving the internal structure. Materials are better distributed and used in combination so as to give maximum results. Plywood and duralumin are replacing textile coverings. Pilot's compartments are designed for comfort on long stretches of flight and standardized dashboards place all instruments in better view. In short the airplane history has begun to follow the methods of the automobile makers, and the result will inevitably be the same—better ships at a lower price.

Airlines are growing fast. Statistics for 1926 list seventeen lines operating an aggregate of 6642 miles. The end of 1927 lists nineteen lines operating over 9191 miles, an increase in mileage of 38 per cent. That is real progress.

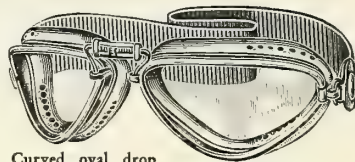
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